The Builder.

No. CCXCVI.

SATURDAY, OCTOBER 7, 1848.

LAST week we led our readers, with a "running pen," to the ancient and interesting city of Caen, the *Cathim* or *Cadhom* of the Saxons, by whom it was probably founded. We touched in our way at Boulogne, Abbeville, Rouen, and Havre, not attempting anything like a connected account of the journey, but just noting such new things as were likely to interest, or be of use to our readers. That they were found new, and not uninteresting to the public generally, is shewn by the fact that there are few of our contemporaries of the daily press who did not reprint some of our memoranda and opinions.

Caen, as we said just now, is a Saxon town, and its connection with England did not stop there. When the Normans became its masters, and the Duke William was installed King of England, the communication between the countries was necessarily considerable. In 1346 Edward III. ravaged Caen and its neighbourhood, and in 1417 it was invaded by Henry V., and remained in the possession of the English nearly 40 years. Several buildings were erected by them here, and in other parts of Normandy; and in 1431 the Duke of Bedford, in the name of Henry VI., organised the university of Caen. The definitive installation of this establishment took place in 1439, in the church of St. Pierre, the elegant spire of which we have already alluded to.

St. Pierre belongs mainly to the fourteenth and fifteenth centuries, but the chapels forming the end of the building were added in 1521, and present very remarkable examples, both internally and externally, of the forms which pointed architecture assumed just previous to the entire abandonment of this style in favour of an imitation of the architecture of classic times. The interior is full of vagaries, carved pendents drop many feet from the vaulting, and the ribs are most curiously involved. Externally, both here and in other churches of the neighbourhood, the style shews much elegance and invention, and is well deserving of study. On this subject, if the divergence can be pardoned, we would note, that amongst *renaissance* works in Normandy of more perfect character than the chapels in St. Pierre, the extraordinary monument to Cardinal Amboise in Rouen Cathedral, dated 1525, should especially be examined. It is one of the most beautiful and elaborate of its class, full of sculptured figures and abounding with ornament.*

Returning, however, to St. Pierre, we would say that the stone used in its construction, which is apparently of the same formation as that now quarried, is for the most part in a good condition, excepting near the ground, where dampness and other causes have acted upon it. A large rose window in the entrance front (north), open tracery in the gable over this, and open parapets on both sides of the nave, but especially on the east side, are remarkably perfect.

A very curious collection of buildings near this church, the old *Bourse, Hotel de Monnaies*, &c., belonging apparently to the end of the sixteenth or beginning of the seventeenth century, and which have been little noticed by travellers, are not in so good a state. These structures, fronting a quadrangle, present columns and entablatures (in two stories), lofty roofs, ornamented stone dormers, turrets, and niches containing sculptured figures. A statue of David with the head of Goliah, and one of Judith, fill two of them. In others groups of sculptured foliage and instruments are held up by a hand which comes through the dome of the niche, while a head, as of the owner of the hand, is seen projecting from the entablature above the niche.

Notwithstanding the abundance of stone, and its general use for a very long period of time, there are many carved wooden houses with gables, precisely similar to some old English houses of the fifteenth and sixteenth centuries.

St. Sauveur, with additions of the *renaissance* period, and the modern shops plastered against it, like swallows' nests (as is unluckily the case all through Normandy), and the elegant tower of *St. Jean*, rent and sunk though it be, would afford subjects for comment; but we must away to the real object of our journey,

THE STONE QUARRIES OF CAEN,

Having first glanced at the quay on the right side of the river Orne, going to it from the town, where the three principal stone merchants, Messrs. Luard and Beedham, M. Foucard, and M. Jobert, have their wharfs, and keep a large quantity of stone ready for shipping.

When we say that, perhaps 400 cargoes of stone, averaging 100 tons each, are shipped hence in the year, and chiefly for England, the importance of the inquiry, and of obtaining, if possible, the best description of stone, becomes evident at once. At Buckingham Palace, Windsor Castle, the Army and Navy Club, Mr. Hope's new mansion in Piccadilly, and scores of churches and other buildings throughout the country, Caen stone is being used at this moment, and its failure, in some instances, has therefore necessarily caused considerable disquiet in many minds.

The importance of using care in the selection of stone for building purposes was not felt till recently,—the fact that the same quarry, of whatever stone it may be, will supply a bad as well as a good material was unnoted;—and the result is that many modern structures are in a state of obliteration. Blackfriars-bridge, built of Portland stone, began to show symptoms of decay before it was finished. Several modern churches, built of the same material, retain little or none of their original carving; and some of the mouldings in the arches at Hyde-park-corner are all to pieces. We could even point to a building of the same material not yet finished, where, in spite of more than usual care, stones have crept in which are not likely to endure any time; and yet we all know that the Portland quarries do furnish stone as lasting and as good as any we can obtain. For this reason we have taken this stone as our example in illustrating the remark on the necessity for care in selection, and the little attention paid to this subject heretofore in England. The appointment of the commission to select stone for the Houses of Parliament, and the report which they published, have led to a different feeling on the subject, and cannot fail to be productive of advantage. Knowledge is now wanted, and that can be obtained only by careful inquiry and diligent investigation. Of this hereafter.

The principal quarries are at *Allemagne*, about a mile and a half due south of Caen. There are others at *La Maladrérie*, a suburb of Caen in another direction, but we shall confine ourselves to the former, simply remarking that the stone from the latter quarries seems to be of an inferior quality, and is distinguished by the occasional occurrence of a long narrow fossil shellfish (apparently a *pholas*), which we had no opportunity of closely examining.

Before entering the quarries we must in justice remind our readers, although we mentioned it last week, that we were accompanied by Mr. C. H. Smith, who has given long and continued attention to the nature and value of building stones, and was a member of the Government commission before referred to.*

On approaching the stone district, the visiter will observe here and there, scattered over an extensive plain, a small erection, with a heap of *débris* around it, and in a few cases a huge wooden wheel, without any building. These severally mark the shaft of a quarry. The use of the wheel, turned by men by means of spokes on the periphery of it, has been abandoned, and a steam-engine in a small building adjoining the shaft, the mouth of the shaft being also roofed over, has been substituted.

In the first we descended, the shaft was 12 feet by 7 feet, getting somewhat larger towards the bottom,—30 feet in depth down to the ceiling of the quarry, and was formed through beds of various thicknesses, from 1 foot to 3 or 4 feet, with a layer of small cherty nodules between the beds, 3 or 4 inches in thickness. From the ceiling to the floor of the quarry, and comprising the whole of the workable beds, it was 22 feet. The latter were very level, and the joints nearly vertical, giving as square and regular an appearance as if formed artificially. A steam-engine of 4-horse power was used, and the blocks raised weighed from 7 to 9 tons. There was a boring to supply the engine with water, 180 feet deep, and the quarry was very dry. It was worked underground, in a north-east direction, in galleries 20 feet wide, with continuous walls of the stone 3 feet thick left in to divide them, and support the superincumbent earth.

The quarries in this respect are under the supervision of a Government inspector, who enforces by constant visits the provision of proper supports. When piers are left in lieu of a continuous support, they are required to be 9 feet square. Notwithstanding the inspector, there were parts where the area unsupported, appeared much greater than 20 feet square (we measured one spot 30 feet square), and, being perfectly level, intersected by occasional fissures, had a somewhat threatening appearance: the rareness of the fall of a ceiling shews the cohesive power of the bed. The quarries each extend a considerable distance, and present in places very striking effects. The arrangement of the beds, looking as if giants had been building, makes quarrying easy and the waste of stone comparatively small. Of these particulars, however, which apply to all the quarries equally, we will speak hereafter.

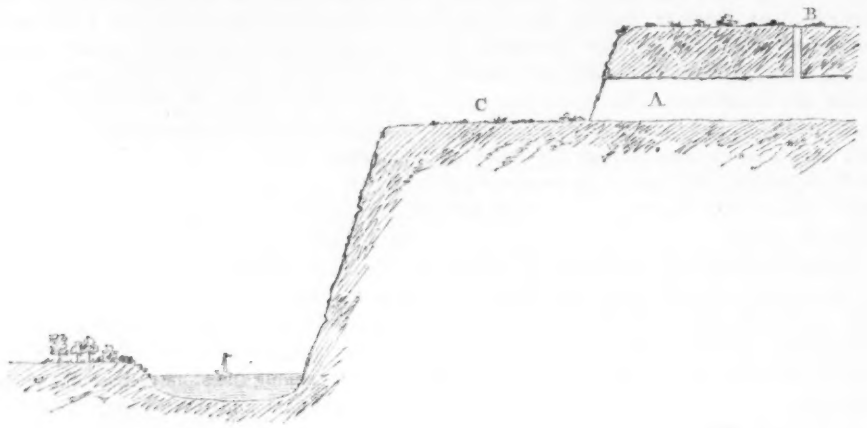
The second quarry into which we went was east of the first, and was unworkable, being full

* Very little good ancient ironwork is to be found in the churches of Normandy. For the rarity' sake, therefore, we must note that there is a cleverly wrought lock and handle of the fifteenth century on the door of a chapel on the south side of the chancel of the building just named—Rouen Cathedral.

* The whole cost to the country of this commission did not exceed 1,260*l*. Had the sum been double it would not have been unwisely spent.

of water. Here the ceiling bed was 50 feet from the surface of the ground. Much money had been spent upon it, and the owner considered that he should be able ultimately to clear the water by means of the engine, and win the stone.

We have described these two quarries as being entered by means of a shaft, and there are many others in the same position. The majority, however, of the Allemagne quarries are in the hill-side, overhanging the river Orne, and need no shaft. The river runs at the foot of a steep escarpment, which rises 60 or 80 feet above it. At this level there is a wide roadway, and then beyond this the hill again rises: and it is in the face of this second escarpment that the quarries are opened. The annexed slight sectional diagram will make their position more evident.



A is the entrance to the quarry; B an occasional shaft for ventilation (there are but very few of these); and C the roadway. On the other side of the river a flat country extends as far as the eye can reach.*

The quarries are worked to a great extent, and from west to east, the joints facing the cardinal points: some of them extend more than a quarter of a mile under-ground. A few of them communicate by lateral passages one with another, and would shelter an army. The glimmer of the quarrymen's lights seen at the end of a gallery, and the sound of their chissels, a scarcely heard "pick, pick," increase the peculiar effect of the scene.

The men remove the stone by cutting a space 6 inches wide between the beds horizontally, and about 4 feet in extent, by means of an iron bar 1 inch in diameter, chissel-pointed, which varies in length according to the period of the operation, but is sometimes as much as 9 feet. Upright joints are cut in the same manner, and the block is then easily removable.†

Let us now note the beds as they are found in the majority of the quarries. Mr. Donaldson gives the names in his paper which we printed some time ago, but it is necessary we should repeat them. The ceiling bed (about 2 feet 6 inches thick) is called the *banc cloutier*. It is cohesive and sound, as we have already seen, but containing pebbles (semi-flints), cannot profitably be worked, and is never taken out.

The workable beds, six in number, are named as follows:—

The *Banc pourri*.—This is under the ceiling bed, and is about 3 feet thick. It is considered a good stone, well indurated, but as it occasionally contains pebbles like those in the *banc cloutier*, although not to the same extent, is not so fit for fine work as the lower beds.

The *Gros banc* lies next, and could be got out 5 feet thick; but as this is too large a size for convenience, it is usually taken out in two thicknesses, 3 feet and 2 feet, and the smaller of the two is called the *banqueret* of the *gros banc*.

The *Pierre franche*, which follows, is about 3 feet deep, and appears to be considered the *best* and most durable bed. Then come

The *Banc de quatre pieds*, which has usually the thickness from which it takes its name, 4 feet; and

The *Pierre de trente pouces*, which, in like manner, is always 30 inches thick. Both of these are good beds, and are the lowest which ought to be used for external work. The last bed which is quarried is termed

The *Banc franc*; and this being like the *gros banc*, nearly 5 feet thick, is split into two thicknesses, 3 feet and 2 feet, of which the upper (2 feet thick) is called the *banqueret* of the *banc franc*.

There seems to be no difference of opinion, amidst the greatest differences in other respects, as to the unfitness of the whole of the *banc franc* for external work. Unfortunately, however, it is from this bed that the largest and most shapely stones can be obtained with the least difficulty; it is the stone from this bed which is least venty, and which cuts with the greatest ease and the least waste, so that many builders, perhaps not fully aware of its unstable nature, prefer to take it rather than the harder and more durable stone. Up to a very recent period the stone from this bed has been sent into the market, by all parties, with that of the other beds, to be used indiscriminately, a fact which is thought to account for the decay which is now observable in various quarters. Caen stone does not differ in this respect from the oolites in our own country: the bottom beds of the Bath quarries and Portland quarries, for example, are softer and much less durable than the top beds.

Of late, one of the Caen houses (Messrs. Luard and Beedham), becoming satisfied that the bottom bed is not fit for outside work, profess to mark with a cross every block which comes from it, so that these may be used in parts not exposed to the effects of weather, and we are disposed, after inquiry, to believe their profession. They further number each block on the upright side of it as it stands in the quarry, so as to show with certainty the way of its bed. If builders, to save labour or through carelessness, will, nevertheless, use the "bad" bed externally, the culpability of course rests with them, and the reputation of the stone is risked in spite of any precaution which may be taken to prevent it.

We did not find that the other merchants profess to distinguish the blocks of the bottom bed from those of the upper. One of the principal of them, who, although he would not admit that the *franc banc* gave the worst stone, still called it in conversation the "bad" bed, said, "If I distinguish this, I shall have to keep it back, and what can I do with it? When dry, the stone looks all alike, and I defy any person then to tell one bed from another." This is true enough; but which bed will *last* the longer, and what is the wise course for those to adopt who are really interested in maintaining a good reputation for the stone, are quite another question.

To distinguish bad stone from the good, when both are dry, appears, indeed, to be almost impossible; but it is not so when fresh from the quarries, or even after rain, when the stone is in its place. It is considered by those who have had the most experience of the stone that blocks which are party-coloured (part dark, part light) are, as is the case with Portland stone, less trustworthy than those which are of an even colour,—more equally indurated. The soft parts of the stone remain dark, perhaps because they absorb water more readily than the harder portions; or it may be that the constituents are different: this, however, we shall speedily prepare to decide by experiment. It is proper to remark that absorbing water is not necessarily the *cause* of the decay (some very absorbent stones are known to be very durable), but is an evidence of the want of solidity and compact agglutination. When quite dry the bad stone would probably be found to have a less specific gravity than the good,—a question which, with many others, we shall endeavour presently to determine. But here we must leave the subject till next week.

George Godwin.

* The appearance of Caen and intervening country, seen from the hill-side, is very beautiful.

† The men begin work at half-past five in the morning. They have one hour allowed them for breakfast, two hours for dinner (one of which they usually pass in sleep at the quarry's mouth), and half-an-hour in the afternoon. They leave off work at eight in the evening. When working by the piece, which is usually the case, some men can earn from 3s. to 5s. a day; many, however, do not earn 2s. a day.

SOME OF THE GREAT NAMES IN ART.

DA VINCI—MICHELANGELO—RAFFAELLE.

With reference to a recent discussion in the pages of The Builder on the value of ancient art, it may not be amiss to glance at some of the great men of the revival. Let us first for a moment consider the wonderful powers of mind of the venerable Da Vinci, who was not only the greatest painter, but the most profound and original thinker, the greatest mathematician and most ingenious mechanic of his time; architect, poet, chemist, musician,—it is marvellous to contemplate all that he excelled in; nor are we only astounded by the variety of his natural gifts and acquired knowledge, but by the practical direction of his amazing powers; for, though it was said of him by Fuseli, "that he was fitter to scatter hints than to teach by example," yet it must be acknowledged that his hints were germs of great truths; he was the first to break up the fallow ground of science and philosophy, that was afterwards cultivated by Galileo, Kepler, and other illustrious names; although his fame now rests on the works he has left as a painter.

And then the sublime genius of Michelangelo, whose very name seems to awaken sensations of awe, and whose works have been universally regarded as the most solemn and impressive that human hand ever produced,—whether we consider him as a painter, illustrating the destinies of man in the sublime circle of the Sistine Chapel—as a sculptor, uniting the greatest magnificence of design with the utmost simplicity and breadth—or as the architect, whose vast and daring genius undertook to lift the cupola of St. Peter's, and as he himself said, "to hang it in the clouds."

And lastly, and certainly the greatest name

take him for all in all, that shines upon the page of the records of art, the wonderful Raffaelle. Who has not heard of his fame, which has for three centuries filled the world—who has not attached some associations of excellence and beauty more or less distinct to his familiar name? The land which gave him birth may be said to have been raised in the scale of nations by the strength and power of his genius, which elevated the standard of art to its climax, and that even amidst the clamours of war: for Italy had been for many centuries the scene of fearful calamities, which had enveloped her states in rapine and conflict, and deluged her fields with blood! And we may here notice that it is not a little remarkable that the arts of peace should have attained their greatest perfection in the very midst of war. It is related of Michelangelo, that while he was executing some of his noblest works, he was strangely interrupted, by being employed by the republic of Florence, after the expulsion of the Medici, to fortify his native city against his former patrons, and that, great as an engineer, as well as in every other department of art and science, he defended the city for nine months. It is related also of Parmagiano, that at the same time (which was on the occasion of Rome being taken and pillaged by the barbarous soldiery of the constable of Bourbon) he was engaged upon his picture of the vision of St. Jerome, now in our National Gallery, and that he was so absorbed in his work that he heard nothing of the tumult around him till some soldiers, headed by an officer, broke into his studio. As he turned round in quiet surprise from his easel, they were so struck with the beauty of the work, as well as with his own calm dignity, that they retired and left him unmolested.

But to return for a few moments to Raffaelle; for, although his name is a household word amongst us, and his works, through the art of the engraver, are in every folio, we cannot too often attempt to discover the secret of his transcendant success; and, indeed, if any apology is needed for thus dwelling on his peculiar excellencies, after it has been done by so many and such able hands, we will only say, that it would be considered almost sacrilegious to mention his name, without pausing a moment to do homage to his genius.

He was a painter so consummate in judgment, so accomplished in science, so much admired in the age in which he flourished, his works have been by common consent so cherished through every succeeding generation, and his memory so revered, that it becomes no less a matter of merit in the estimation of his votaries to dwell on the praises he won, than on the reasons which led to his great distinction and success.

He carried to the highest perfection that union of beautiful mental perception with superlative mechanical skill which constitutes the complete artist. Genius incontestably belonged to him, for in every subject he handled, the demonstrative acquirements of art lie hid beneath the purest character of nature. He possessed to an extraordinary degree the power of displaying in his works the virtues that adorn, and the vices that degrade, humanity; the grace and tenderness of the female character, with the energy, the activity, and the vigour of man. His works appeal by the purity of their sentiment to the best sympathies of our nature; they strike some key note in the mind of every intelligent observer, the vibrations of which cannot but be productive of an elevating and refining influence.*

Such were the men who prepared, and such was the genius that raised to its height the fabric of modern art.

These were the days of the greatest prosperity art ever knew, when princes and potentates considered themselves happy in the possession of the friendships and favors of those who practised it. Such was the brilliance and splendour it had reached in the beginning of the sixteenth century.

The stream of modern art had flowed on, dating its rise so far back as the days of Cimabue, in the thirteenth century: it had rolled on, gathering, age after age, strength and volume and fullness, enlarging its bounds and deepening its channel; until under the auspices and protection of the Medici, it had become a mighty stream, reflecting on its limpid wave the beauties of nature on every side, and taking its majestic course through Italy, the garden of the earth!

And here, let us not be told that these are subjects of little consequence to the artists of Britain in the present day: let it not be said or thought, that it is enough for them to pursue their professional labours from day to day with such advantages as the times or circumstances supply, without examining, either closely or superficially, the causes which led to the great perfection achieved by the painters of a departed age. It is to be feared that the ideas of artists on most subjects are far too circumscribed; and that they seldom look beyond their studio walls for information. They forget the practical lesson conveyed by that eloquent passage in Dr. Johnson's Rasselas, in which he enumerates the qualities a *poet* must possess, and which are so equally necessary for the artist, that we may be excused for quoting it:—"To a poet," he says, "nothing can be useless: whatever is beautiful, whatever is dreadful, must be familiar to his imagination. He must be conversant with all that is awfully vast, or elegantly little. The plants of the garden, the animals of the wood, the minerals of the earth, the meteors of the sky, must all concur to store his mind with inexhaustible variety; for every idea is useful for the enforcement or decoration of moral or religious truth; and he who knows most will have most power of diversifying his scenes with remote allusions, and unexpected instruction. But the knowledge of nature is only half the task of the poet: he must be acquainted likewise with all the modes of life; this character requires that he estimate the happiness and misery of every condition; observe the power of all the passions, in all their various combinations; and trace the changes of the human mind, as they are modified by various institutions and accidental influences of climate or custom, from the sprightliness of infancy to the despondence of decrepitude." T. F. M.

* After these illustrious names followed those who completed the magic circle of art, who applied and directed their powers to decorate the "established system," and by whom "the refinements of taste, grace, sentiment, colour, adorned beauty, grandeur, and expression." These were Titian, Correggio, and others, whose names will be familiar to all.

DISTRICT SURVEYORS' FEES.

REFEREES' AWARD.

IN a requisition received by the official referees from Mr. Meears, of Wandsworth, builder, it was set forth that he had recently built a cottage, together with a washhouse consisting of one story, and communicating with the cottage; and that the foundations and footings of the washhouse were put in at the same time with those of the cottage, and a portion built with the back wall of the cottage; but the roof was not on the washhouse until twenty-one days after the main roof of the cottage was on; and that in erecting the said cottage it was necessary, or required by the district-surveyor, to raise the party-wall of the adjoining house (late Forster's) on the west side thereof, above the roof of the cottage, and that it was also necessary, in erecting the external side-wall on the east side of the cottage, to cut off the ends of the rafters forming the overhanging eaves of the house adjoining to the cottage on the east side thereof (occupied by Zeeley). It then set forth that the district-surveyor of Wandsworth in respect of these works, had charged four several fees, amounting in all to the sum of 6*l.* 10s., according to the following account:—

	Rate.		
New building, 1st class, exceeding in area four squares. Roofed in 27th May	3rd ..	£2 10	0
Addition of attached office to ditto	..	1 5	0
Alterations (late Forster's) 1st class party-wall	2nd ..	1 10	0
Alterations, roof, walls, and gutters (Zeeley's)	3rd ..	1 5	0
Total		£6 10	0

The builder requested the referees to determine,—

First. The rate of the cottage. Secondly. Whether the washhouse, called an "attached office" in the bill, is not a part of the said cottage; or whether the same is to be distinctly rated, and to which of the fees, in the Act appointed, if to any, the erection thereof is liable. Thirdly. Whether the operation of raising the party-wall on the west side of the cottage, as before described, is an alteration of the adjoining building for which any fee is provided by the Act besides the fee for the erection of the said cottage. And fourthly, whether the operation of cutting off the ends of the rafters to the building on the east side, is an alteration for which any fee is provided by the Act, besides the fee for the erection of the said cottage.

At the hearing, the district surveyor admitted that the cottage was by area a building of the third rate of the first class, and was not built with walls of the requisite thickness for that rate, but with walls of the thickness of 8½ inches, as required for buildings of the fourth rate of the first class, to which rate the cottage was at first supposed to belong, according to the notice given to the surveyor; and the surveyor stated that the washhouse consisted of one story only, communicating with the ground story of the cottage, so that there was no back way out of the cottage but through the washhouse.

The referees determined,

"First, that inasmuch as the said cottage, exclusive of the said washhouse, covers more than four squares, and not more than six squares, in area, and is not more than 52 feet in height, and does not contain six stories, the said cottage is a building of the third rate, of the first or dwelling-house class.

Secondly, that the said washhouse is not an attached building to be distinctly rated, and for which a distinct fee would be payable; but is an office belonging to and forming part of the said cottage, and not to be included in ascertaining the area thereof according to the rule of schedule C, part I., of the Metropolitan Buildings Act in that behalf; and that such washhouse was commenced and carried up with the said cottage, within the meaning of the said first-mentioned Act, and is not an addition made after the completion thereof, and that no fee is payable to the district surveyor for the supervision of the erection thereof, besides, or in addition to the fee provided by the Metropolitan Buildings' Act, for the building of which it forms a part.

Thirdly, that the raising of the party wall between the said cottage and the building thereto adjoining on the west side thereof, to the requisite height above the roof of the last-mentioned building, is not an alteration of that building within the meaning of the Act; and that the supervision of such operation is a special duty or service required by the Act to be performed by the district surveyor; and inasmuch as such duty or service has been performed incidentally to the building of the said cottage in respect of which another fee may be payable, it would not be lawful for the said district surveyor to receive any fee for the same in pursuance of the provision of Schedule L, of the Metropolitan Buildings Act in that behalf."

Fourthly, As to the operation of cutting off the ends of the rafters, and forming a gutter to the building on the east side of the said cottage, the same as the last.

"And we do hereby further determine and award, that inasmuch as the said cottage has not been built in every respect agreeably to the directions of the Metropolitan Buildings Act, certain of the inclosing walls thereof being of the thickness of 9 inches instead of 13 inches, as prescribed by the Statute for buildings of the class and rate to which the said cottage belongs, it is not lawful for the said district surveyor to receive any fee in respect thereof."

The costs, 2*l.* 12s. 2d., to be paid by the district surveyor.

BRISTOL.

NEW sewers are being constructed in the streets of Bristol to a considerable extent, and not before they were wanted. The shape adopted seems to us a bad one,—if we may judge from one specimen we examined the other morning when in that city. The bottom is very wide and nearly flat,—better adapted for retaining deposits than facilitating a quick and cleansing discharge.——Our advocacy of the restoration of the ancient High Cross may have been not unavailing. A meeting of the subscribers to the proposed fountain was held last week, when it was resolved to postpone this project, and to obtain subscriptions for erecting an exact copy of the old cross in College-green, at a cost of about 500*l.* It is to be hoped that an efficient architect will be employed.——A new market is being built, and has the roof nearly on. Some ponderous iron-girders forming the centreing, and providing abutments for stone arches, give the

notion that iron must be pretty plentiful in Bristol: but as the building is unfinished comment might be premature. Mr. Pope is the architect, and Willcox the builder.——Considerable additions are being made at the Infirmary.——Scaffolding is being put up for the restoration of the noted north porch of Redcliffe Church, under Mr. G. Godwin, architect, at the cost of a munificent anonymous correspondent, who signs himself *Nil Desperandum*. The occurrence has so much mystery and romance about it that we may on another occasion go into particulars, and we will then give an engraving of this magnificent specimen of the Decorated style as it will appear when restored.

THE GAS MOVEMENT.

GAS CONSUMERS—'LARGE' *v.* 'SMALL'—STRONG *v.* WEAK AND DISUNITED.

Matter of serious Import.

On more than one occasion we have threatened the general exposure of an iniquity on the part of Gas Companies, and even also, as we shall now show, on the part of Corporations, and public and other associations, in connivance with them, towards the great mass of what are classed by these as 'private' consumers, contradistinct from 'public,' and 'small' consumers, contradistinct from 'large.'

The iniquity under consideration is so gross as to be scarcely credible. On a recent occasion, we characterised a difference of 1s. 6d. on 5s. per 1,000 cubic feet of charge made by the Rugby Company between their contracts with the London and North-Western Railway Company at 5s. per 1,000, and their 'private consumers' at 7s. 6d. per 1,000, as a shameful one, but such a difference shrinks into the modesty of scarcely visible dimensions, when contrasted with a host of others. What will our readers think of a frequent exaction of 30, 40, and 50 per cent. from the great mass of 'small' or 'private' consumers, beyond the rate charged to large or influential associations, companies, or corporations, who might otherwise make their own gas? Nay, of the not unfrequent exaction of several hundreds per cent. beyond municipal corporation prices?

Not to dwell upon mere abstractions however, let us consult the records of the gas companies' own confessional,—ever holding in remembrance, that since there is no fear of their being 'too truthful,' or 'revealing too much' in their own estimation, we can scarcely satisfy ourselves that we have even then fathomed the deepest depths of this mystery of iniquity. Yet out of their own mouths we shall superabundantly condemn them, else we are indeed mistaken.

And first let us square accounts between the 'large' consumer and the 'small,'—ever keeping in view that, in the aggregate, the 'small' are in truth the large, and the 'large' the small; and as for any thing like excuse or justification on the ground of additional risk, or additional expense in distribution of gas or in collection of proceeds, we shall only say, that if the gas companies are able to sell—with a sufficient profit is a matter of course if ABLE to sell — at prices 30, 40, 50, or 100 per cent. below those comparatively enormous charges exacted piecemeal and at will from the great but *unfortunately not associated* mass of 'small' or 'private' consumers, it must indeed demand the swallow of the most voracious and indiscriminate gullibility even to ruminate for a single instant on the defence, pretence, or whatever we may call it, that additional risk or increased expense give anything but the most sidelong and sinister countenance to so iniquitous an overcharge on the disunited mass of the gas-consuming public; even though it were not the self-condemnatory fact that *many of the companies do not consider themselves entitled to exact a single farthing* from small consumers on account of any such expense or risk: good reason why they should not too, considering that, as to risk amongst the small consumers, every individual rogue or other defaulter on the 'large' scale is equivalent to and must absorb the defalcations of a multitude of the small; and that as to expense of distribution and collection, these, in fact, constitute almost the only outlay at all, which renders gas a thing *of any* cost to either large or small; and though they may entitle companies to charge something like a moderate average price from all, whether near their works or not, do by no means entitle any of them to come it over the small and unprotected in particular with so strong a double dose of cost and extras as so many of them do, even in the somewhat more conscientious face of their fellows who have never dreamt, or have now repented, of doing so, or who have pitched their exactions at a much more moderate rate which almost equally condemns the enormity to which this unprincipled and inconsistent system of wholesale plunder occasionally mounts.

At Birmingham, the last price to large consumers, recorded in the Parliamentary abstract, was 3s. 9d. per 1,000 cubic feet, with 10 per cent. discount; while from 4s. 6d. up to 6s. 8d. were exacted from small consumers, and especially from those who paid quarterly in place of only annually.

At Bristol the rate of charge was 6s., with discounts rising from 7½ to 20 per cent., according to the quantity consumed by one individual or establishment.

At Bury it was 7s. 6d., "subject to discounts, varying, according to consumption, from 2½ *up to* 30 *per cent., and discount also allowed for prompt payment.*" What a lingering love is here displayed for even the shadow of a higher price when the substance has vanished! What a tempting *superfœtation*, too, of discount on the back of discount!

At Derby, discounts have ranged from 10 up to 40, 45, and even 50 per cent., according to the quantity consumed by one 'large' paymaster: that is, the multitude of unassociated shopkeeping neighbours, making up one contiguous, though disunited aggregate of large consumption, taken piecemeal, have been made to pay 6s. 6d. per 1,000 feet overhead, while the fortunate and powerful single holder, or company of holders, of a range of mills or factories, capable of being provoked into erecting gas works of their own, have been only charged somewhere about 3s. 6d., or little more than one half!

At Halifax, the sliding scale of discounts mounts up from 2½ per cent. on 6s. for the poor and helpless devils, to 50 per cent. for the rich and *able*, who therefore enjoy their gas light at the rate of 3s. per 1,000 in place of 6s.

At Kidderminster, the price to the few large consumers is 6s., while 10s. are exacted from the many small.

At Leeds, the bonus offered to the large consumer is 25 per cent. discount; the bone thrown to the mere 'small' consuming dog, but 2½.

At Newcastle, as if to shew that coals at least are guiltless of the imposition, 20 per cent. on 4s. 6d. are presented to the great, but only 10 to the small.

At Over Darwen the company's profitable price has long been 4s. 6d. to the great, while they have come over the small to the tune of 8s. 6d., which shame has at length diminished into 7s. 6d.

At Rochdale, the reduction of the nominal price is 15 per cent. to the large consumers, 5 to the smaller, none at all to the small. At Stalybridge it is 30 to the large, 2½ to the smaller, and none to the small.

At Wakefield the wholesale price is 3s., the retail, 5s.

At Warrington, the discounts fall from 46 per cent. to 4. At Wigan, mills are supplied at 5s., with 15 per cent. discount; shops at 6s. to 7s. with none.

In Scotland, one of the Glasgow companies was wont to present its large customers with a bonus of 25 per cent. discount on a nominal charge of 6s. 8d., while the small were put off with 5; and the other companies made 6s. 8d. and 5s. the distinction between the two; but since 1846, both companies have begun to see the iniquity of even these comparatively moderate distinctions, and have resolved to charge 5s. from all,—a virtual acknowledgment that they have no just claim on the small consumers either for extra risk or additional expense.

There are reasons, it is said, for every thing, whether the reasons be good and sufficient, just and fair, or otherwise. We have already more than once gently hinted the main reason for the state of things revealed in the black list just quoted from; but we need not rest in mere surmise while we have the means of solving the mystery *ipsissimis verbis* of some of the sagacious, but, perhaps, 'too truthful,' shareholding constituents of the gas companies themselves. At page 571 of the last volume of THE BUILDER, it is noted that "in consequence of the important and significant movement of certain manufacturing and other firms towards the manufacture of their own gas, the Lincoln Gas Company were again lately urged by some of their own shareholders to authorise a still further reduction of the price, as a boon to the consumer *and a matter of policy to prevent private enterprise in the manufacture.*"

So! the secret is out! Wherever there is *no chance* of parties making their own gas, there put on the screw; but wherever there is *some chance*, on the contrary, *there be reasonable.* Meditate on this, ye "small consumers!" and take your measures, that is, adjust your meters, accordingly. Unless you can each of you provide yourself with what a sprightly contemporary, the *Gateshead Observer*, calls "Gas for one,"—Associate—Associate—have "Gas for all." If not by individual aggrandizement, still, by mutual adhesion, rise into the commanding attitude of the "large consumer." Then and only then may you expect to enjoy a share of those glorious 50 per cent. bonuses administered "as a matter of policy" to all who can bring the fear of "private enterprise" before the watchful eyes of the gasholder. Then, too, perhaps, as at Norwich and elsewhere, may even be added to the sterling *bonus*, the scarcely less acceptable award of a "large consumer's" share of the feasting *bolus*, all out of the superabundance even then still reaped and harvested out of your 'jolly green' pastures.

ANTIQUITIES OF NORWICH AND YARMOUTH.

THE NORFOLK ARCHÆOLOGICAL SOCIETY.

At the twelfth annual meeting of this society, held on the 28th ult., Mr. Dawson Turner addressed the visiters at some length on the antiquities of the neighbourhood. He said, first, in regard to Yarmouth, it was well known that at no great distance of time, what was now the site of a town was entirely under water. They knew it by tradition, and by an old map of the town still in the possession of the corporation. They knew it, still further, by the construction of Burgh Castle. Yarmouth had nothing of great antiquity to offer. In reference to the restored church, it was only four weeks since that edifice was opened. The castle was formerly a remarkable building in the town, and the site of it was to be seen by reference to a map of the time of Queen Elizabeth, copied from one in the British Museum. That castle has been all swept away, and all they knew of it was that the site of it was in one of the rows still retaining the name of the Castle-row. Turning to the monasteries, they had the remains of six, including the lazar houses. Of these six the sites might now be traced, when they had an opportunity of doing it. One of them was situated between two rows; one called Quay Osten-row, and the other Dene Osten-row; so called from the supposed intercourse between Ostend and Yarmouth in former times; but in reality they derived the name from the St. Augustine, or St. Austin, friars having a monastery in that row, of which monastery little now remained, and it was used by that respectable body the Society of Friends. Turning then from the castle, and from monastic buildings, he came to houses of later date. Two of the time of Queen Elizabeth were of an interesting character. The most remarkable was that now occupied by Mr. Charles Palmer, respecting which he had published an elaborate and beautiful volume, shewing what domestic architecture was in the Elizabethan times. They had an interesting room in the Star Inn, known to have been inhabited by President Bradshaw. They had another house, lately occupied by the Rev. Henry Burroughs, whose absence everybody regretted. They had another room behind the Ballast Quay public-house, the ceiling of which was of the same date; and it was remarkable that it contained the Royal arms of England. Within four miles of the town there were two interesting buildings; he

need hardly say that he alluded to Burgh Castle and to Caister Castle. In regard to the church at Burgh, an interesting fresco was found a few years since, representing St. Christopher. In the church at Belton an interesting fresco had also been found. Those who went to Belton would find it worth their while to take Gorleston Church in their way there,—they would see the arch of the holy sepulchre. On the north side of the altar they would find a cross, which had been uncovered not long ago. The fresco on the font exhibited an individuality which he had not seen any where else.

Mr. Britton then addressed the meeting and said, with Norfolk, Suffolk, Cambridge, Lincolnshire, and all the eastern coast, he was comparatively little acquainted. He had travelled much over them; but such was the march of intellect, and the march of steam, that what had been done forty years since, became now an object of antiquity. A new era had commenced within the last twenty years, and this was an extraordinary epoch in the history of our country, and particularly in the history of archæology, because so many young antiquaries had started into existence, in full-blown intelligence and activity, and full of artistic feeling, and all must be surprised at the quantity of information now given. They found in almost every provincial town a great number, not only of professional artists, but also amateurs, and they had an opportunity of knowing much more than they could formerly. He congratulated the public on the establishment of an archæological society in this peculiar county. He called it peculiar, because, from the time he had become acquainted with Norfolk, he had seen more of antiquarian research among the inhabitants, the clergy, and the middle classes of the county, than in any county of England. He said this advisedly. When he came to this county fifty years since, there was a knot of artists in Norwich—Cotman and others—who gave a taste for the subject, under the direction, advice, and excitement of his friend Mr. Turner. These were things which those present were not very well aware of, and therefore he called attention to them. This county abounded in antiquities of various classes and degrees of interest. There were remains of the Roman, Saxon, and Norman times. There were parochial churches of a curious character. The round tower distinguished this county, but not entirely; and the churches formed a series of the most interesting remains that he knew of in England.

The Rev. R. Hartt read a paper on the mural paintings of the church at Belton; Mr. F. Worship read a paper respecting the bosses in the roof of Yarmouth Church; and the Rev. J. Gunn delivered a discourse, of some length, on the history and architecture of Yarmouth Church, illustrated by numerous drawings.

Excursions were made; and a public dinner in the Town Hall, the Bishop of Norwich in the chair, closed the day.

THE CHURCH AND PHAROS ON DOVER HEIGHTS.

FREEMASONS OF THE CHURCH.

AT a meeting of this society on September 12, Mr. French in the chair, Mr. J. W. Archer exhibited a mural brass to the memory of Sir John Mordaunt, of Walton, Bart., executed by the exhibitor, and intended to be placed in an aisle erected in Wellesbourne Church, near Stratford-on-Avon. The wall intended to receive the above, is composed of tiles of the Reading pattern, with borders encompassing the stone containing the brass. The brass is inlayed in the dove coloured stone of the district. A label containing a passage from the Psalms, supports the shields, containing arms pendant. The base containing the legend, in raised characters, the initial letters and numerals being coloured, supports a recumbent effigy of Sir John Mordaunt, the head resting upon a cushion, diapered in blue and scarlet, this being supported by the coil of the mat on which the figure rests. At the head of the effigy is the figure of an angel bearing a model of the chapel at Walton, founded by the deceased.

Mr. Archer afterwards read a paper on an ancient brass, of which he exhibited a rubbing, now in the tower of old Hackney Church: this paper we shall give at length.

Mr. Stothard then read the following paper on the church and Roman *pharos* at Dover, near the castle, illustrated by various sketches.

Hastead, in his "History of Kent," says, "that tradition supposes that Dover Castle was built by Julius Cæsar." Be that as it may, which is very doubtful, one thing is certain, viz., that the Romans, on their first landing, about the forty-fourth year of the Christian era, did erect certain watch towers on the heights of Dover. Varied are the opinions as to the exact site of one of these, but of the Pharos there can, I think, be no doubt whatever; and that it is more than probable that they did so immediately after their first landing, and that it was, as is stated, intended for a speculum or watch tower, and also as a lighthouse, like one erected by them about the same time at Boulogne. The latter was destroyed in the sixth century, while that on our coast stands as an interesting memorial of the first landing of that great people on our own shores. As regards another tower on Dover Heights, near to the pharos, many historians have supposed that the square tower in the centre of the ruins of the Norman church, standing within four feet of the pharos, must be it, because, as they say, there are on each of the four sides circular holes. This hypothesis I am rather inclined to admit in the absence of some better, because I find peculiar marks about that tower which would lead me to believe that it once stood independent of the church, and that for this reason, there does appear on the west side of that tower a window, above which, by some feet, is seen the marks of the apex of the roof of the church, which would appear to have become an adjunct to the tower erected at a more recent period than the tower itself. In the church, like many others where Roman remains were, the materials of the Roman work found a place in the Norman buildings.

This church, it has been supposed by some, was erected about the year 161, by Lucius, King of Britain. This has been doubted, not the period, but as regarded the founder. Be that as it may, Saint Augustine appears, by the request of Ethelbert, to have reconsecrated it about 597, in honour of the blessed Virgin Mary. His son Eadbold, who succeeded him as King of Kent, did, at the latter part of his reign, renounce Paganism, and founded a college of secular canons, and a provost in this church, apartments being provided for them in the precincts of the castle; but it was but for a short period, viz., till about 691, when they were removed by Wedred, King of Kent, to St. Martin's, Dover, they being too great an encumbrance within a fortification. Hastead states again, that it was probable that this same king pulled down the college, reserving only the church for the garrison, and which appears by wills of later times from the Prerogative Office of Canterbury: it was esteemed to be a parochial church, having a district of the castle as a parish annexed to it by the name of "The parish of the Blessed Mary within the Castle of Dover;" for one John Fardrade, in his will, proved 1501, describes himself of the parish of the Blessed Mary in the Castle of Dover; and again Giles Love, of Dover, gent, by his will, proved in 1519, gave to the high altar of the church of Our Lady, in the Castle of Dover, for his tithes forgotten, the sum of 3s. 4d. It continued a church, with its chaplains, diminishing from three to one, until the end of the reign of King James the First, and then it came into disuse; but it is said that a chaplain still exists and receives the salary. There were many monuments erected therein to the memory of the officers of the Castle, one as early as the year 1384; but all have disappeared, and the names of those only on record by the historian. I took the outward dimensions of this church and the outward dimensions of the pharos. The length of church from east to west is 125 feet; width of nave, 35 feet; extreme width, 75 feet; diameter of pharos, 35 feet.

As to the pharos, its form is octagonal without, and, as I am informed, it is square within; the sides of the square and octagon being equal, about 14 feet, giving 10 feet for the thickness of the walls. Upon four sides of the upper part are single windows, said to be 6 feet high; and the door at the east side is about 6 feet wide and 12 feet high, or was so before the accumulation of the soil or debris; but the round head of the door is now about 3 feet from the ground. The walls of the pharos are composed of alternate layers of Roman tiles and that which is called stalactites. The extreme height of this Roman remain is about 40 feet,—how high it did extend it is vain to form a conjecture. Some persons have been ingenious enough to trace eight windows, or stories: such a supposition I have not had ocular demonstration of, and would not venture an opinion corroborative thereof; but that it has been covered with a facing of stone at some much more recent period than that of its erection there are ample proofs, on the north side, where the casing in part remains, as also the more modern windows and battlements; but that exposed to the sea is divested entirely of the coating said to have been put on by Sir Thomas Erpingham, whose arms, fortunately for such memorials stands on the north side, otherwise that also would have perished.

Mr. W. P. Griffith suggested that the so-called Roman Pharos at Dover, which is placed close to the east end of the church, and is an octagon, might be a baptistery. Wallen, in his "History of Little Maplestead Church" (speaking of baptisteries), had remarked, "As the first Christians always practised baptism by immersion, and wherever they formed a nucleus wanted a building for this purpose as much as for that of worship, Constantine no sooner gave his basilica of the Lateran to Pope Sylvester than he erected behind it a baptistery, to which he gave the octagonal shape."

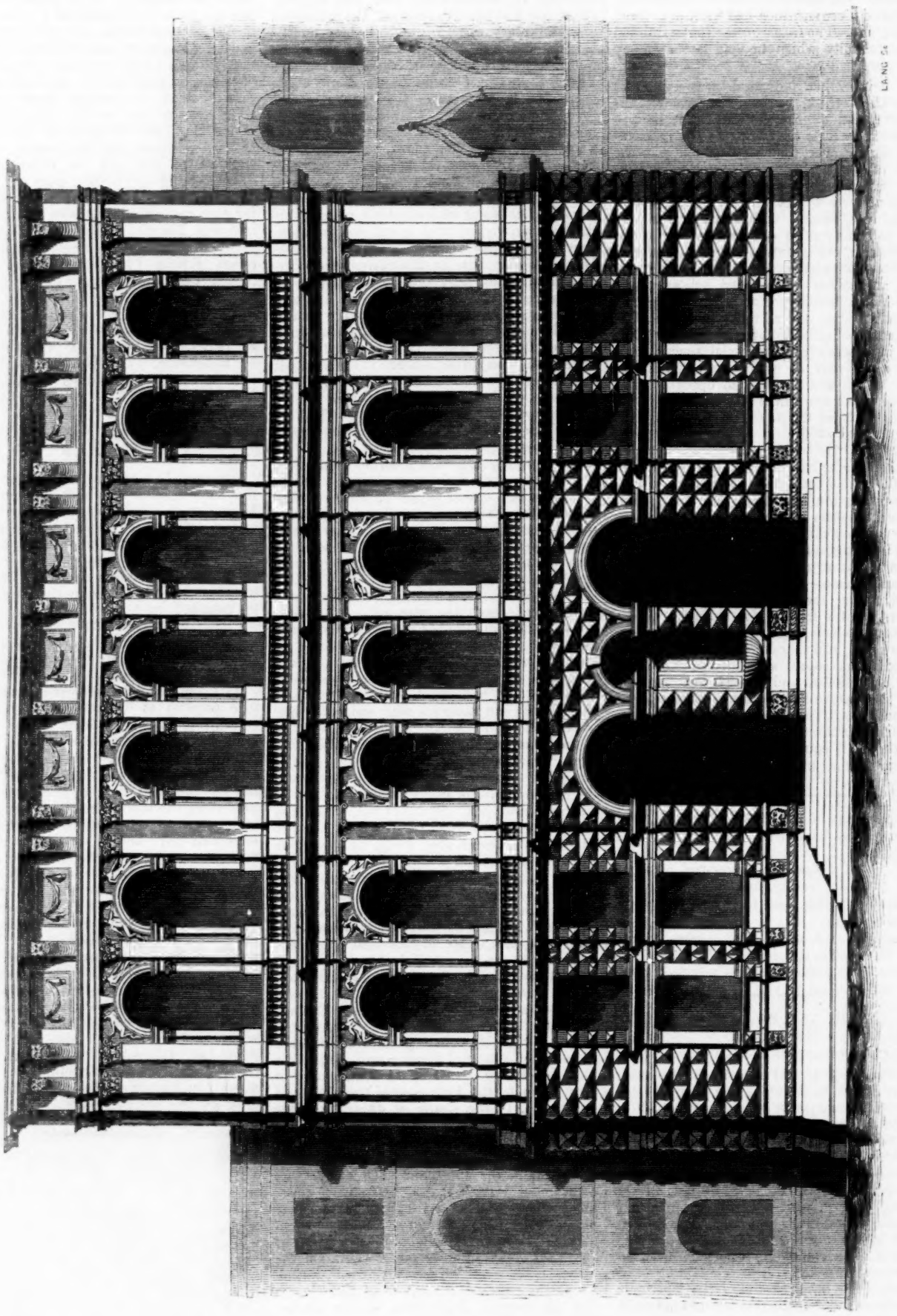
For the sake of the society we regret to hear that Mr. Griffith has resigned the office of honorary secretary, which he has held for several years past. The society meeting once a fortnight during the whole year, the labour of the office must have been very considerable: the able manner in which Mr. Griffith has discharged it, has made the society greatly his debtor.

ARCHITECTURAL CLASSES AT UNIVERSITY COLLEGE, LONDON.

THE courses on engineering and architecture pursued at University College will be resumed on the 24th inst., under Professor Donaldson. The professor remarks, in a letter on the subject, that "Professional education has of late made a great advance. Chance has less influence than it once possessed in producing the results required by public intelligence. Those entering on the field of enterprise have sought to qualify themselves for the struggle, resulting from the contest of active and well-informed minds. It is the aim of University College to offer the opportunity to young men of perfecting the instruction to be gained in the office of the architect, or in the counting-house of the builder. They may acquire in the class-room by study, observation, and experiment, a methodical system of investigation, a course of progressive development, an acquaintance with first principles, and a knowledge of the history of art and science and of the great men who have distinguished themselves. These, it is to be hoped, are calculated to infuse a habit of thought and spirit of self-improvement, which must act beneficially upon the student's future career."

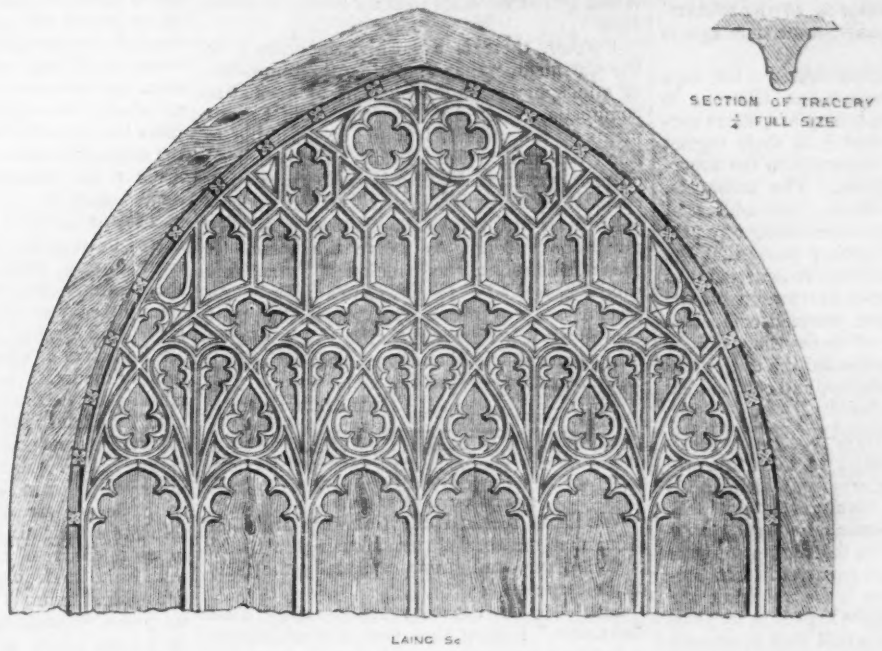
THE IRON TRADE OF SOUTH STAFFORDSHIRE.—BIRMINGHAM, FRIDAY.—The ironmasters of these districts held their usual preliminary meeting at the hotel, Dudley, yesterday. The attendance was numerous. After a long discussion, it was resolved not to make any advance upon the prices of iron fixed at the last quarter-day. Orders are represented to be plentiful, and contracts which for some months have been suspended are now in course of execution.

NEWSPAPERS AT THE LONDON AND NORTH-WESTERN RAILWAY.—The privilege of selling newspapers, &c., at the several stations on this line of railway has been let by tender to Messrs. Smith and Son, news agents, 192, Strand, for the sum of 1,500*l.* a-year. The person who has hitherto supplied Euston station offered the Company the enormous sum of 610*l.* for a stand at that station alone.



THE PESARO PALACE; VENICE.

PERPENDICULAR DOOR, HADLEIGH CHURCH.



THE "PALAZZO PESARO," IN VENICE.

WE take from the sketch book of a *ci-devant* pupil, Mr. Tinkler, the annexed view of the *Palazzo Pesaro*, in Venice, which, amongst the numerous palaces on the Grand Canal, ranks nearly the first. It has grandeur with richness, and presents some novel details: the rustication of the ground story is particularly bold and effective. The two entrances seem objectionable, suggesting a division which does not exist.

Baldassare Longhena was the architect, and judging from the date of "Santa Maria della Salute," built 1630, of which Longhena was also architect, this palace was probably built early in the seventeenth century. It is now the Armenian College. Longhena also built the *Palazzo Bataggia* and the *Palazzo Rezzonico*.

EXPERIMENTS ON THE COHESION OF MORTAR.

THE following record of experiments on the *cohesion* of mortar has been forwarded to us by Mr. B. Baylis, of Chester. The area of the bedjoint was 4½ in. by 4½ in. :—

Materials.	Proportions.	Breaking Weight in lbs.
Common lime and sand ..	2½ to 1	Broke at 160lbs.
Ditto ditto.....	2 ,, 1	Do. by accident.
Ditto ditto.....	1½ ,, 1	Do. at 100lbs.
Ditto ditto.....	1 ,, 1	Do. by accident.
Ground lime and sand	2½ ,, 1	Do. at 95lbs.
Ditto ditto.....	2 ,, 1	Do. at 140lbs.
Ditto ditto.....	1½ ,, 1	Do. at 235lbs.
Ditto ditto.....	1 ,, 1	Do. at 215lbs.
Common lime and fine hammer scale	2½ ,, 1	Do. at 90lbs.
Ditto ditto.....	2 ,, 1	Do. at 100lbs.
Ditto ditto.....	1½ ,, 1	Do. at 90lbs.
Ditto ditto.....	1 ,, 1	Do. at 65lbs.
Ground lime and coarse hammer scale	2½ ,, 1	Do. at 270lbs.
Ditto ditto.....	2 ,, 1	Do. at 280lbs.
Ditto ditto.....	1½ ,, 1	Do. at 275lbs.
Ditto ditto.....	1 ,, 1	Do. at 260lbs.
Common lime and coarse hammer scale	2½ ,, 1	Do. at 140lbs.
Ditto ditto.....	2 ,, 1	Do. at 80lbs.
Ditto ditto.	1½ ,, 1	Do. by accident.
Ditto ditto.....	1 ,, 1	Do. at 130lbs.
Ground lime and fine hammer scale	2½ ,, 1	Do. at 265lbs.
Ditto ditto.....	2 ,, 1	Do. at 230lbs.
Ditto ditto.....	1½ ,, 1	Do. at 265lbs.
Ditto ditto.....	1 ,, 1	Do. at 265lbs.

CAISTOR CHURCH.—We understand the Duke of St. Alban's is rebuilding the chancel of Caistor Church, under the superintendence of Mr. E. J. Wilson, of Lincoln. The old walls, which had spread, owing to the looseness of the soil, have been taken down, and the new work already rises about three feet from the ground.

WOODWORK FROM HADLEIGH CHURCH, SUFFOLK.

"HADLEIGH Church," says Rickman, "is a large edifice with a tower and spire mostly of Perpendicular character, but with some earlier portions. There are two south porches, and the aisles and clerestory extend along the chancel as well as the nave." In one of the south porches thus particularised the accompanying door is found. The tracery is exceedingly bold, as will be seen by the section; the form of it is also good, considering the period in which it was executed—a period when the flowing and graceful lines of the fourteenth century had given place to stiffness and formality.

In the churchyard is an ancient gateway, called the Rector's Tower, profusely ornamented with moulded brickwork, which appears to have been lately restored.—R. M. P.

HOW TO MOVE THE MARBLE ARCH FROM THE PALACE.

ALTHOUGH, as a work of art, the marble arch in front of Buckingham Palace is not particularly striking, it yet seems a pity to sacrifice so costly a structure by removing it to any less conspicuous situation,—especially when in such removal a very considerable additional expenditure must be incurred. Remain in its present position, built up to behind, as it now is, with the new façade, it certainly cannot; but it appears that it might with practicability, and not without good taste, be moved forward so as to range in the west side of the drive which crosses the head of the mall; and that *without its being taken down at all*; by which course much of the expense otherwise attending its removal would be obviated. I presume that, for privacy, the nearly-semicircular space of ground in front of the palace which is bounded by this drive will become the area to be railed in, now that the new façade occupies the area of the former inclosure.

As to the *modus operandi*, our transatlantic brethren have shewn, although not with quite such weighty materials, how such things may be accomplished; and I am happy to think that our own countrymen have not hesitated to follow precedents wherein such moral nerve has been evinced, but have, lately, in the case at Ipswich,* played a similar move with much credit and, no doubt, equal satisfaction.

The plan which suggests itself to me is that of *circum-inserting* about each pier, below the level of the plinth, a framework of massive oak timbers, the several frames bound to each other diagonally in the archways to prevent derangement, and the lateral timbers extending outward in front and rear, to admit of their being crossed by longitudinal binders: the underside of all these lateral beams to be hollowed in the form of a deep segmental groove, lined with, say 3-8ths of an inch, wrought-iron; under each of these beams corresponding ones to be introduced, having the iron-lined groove in their upper side; these latter to be continued eastward in trenches to the intended new site, in a line straight out from the present one, the centres being truly coincident; the plane of the framework and of the under-beams or tramways to have a gentle decline eastward; the grooves to be filled at short intervals with cannon-balls of suitable diameter—say 8 inches; a strong cylindrical beam, of the length of the building, to be mounted some distance behind it, and there firmly secured, horizontally, as a windlass; stay-ropes of sufficient length to be attached to the building, and wound round this beam, so that, in the descent of the building on the inclined tramways—by virtue mainly of its own gravity, and the tendency of the cannon-balls to roll in their channels—its progress may be controlled simultaneously in its several parts. The framework and tramways being properly supported, the foundations to be now carefully removed till the building rests solely on its timber carriage; then man the windlass and ply the levers, and, with good watchful management, I should not fear for the result.

It would be proper to have intermediate timbers under each pier; and these should, therefore, be provided for in the framing and tramways, and be introduced at the time of removing the foundations. It would also be prudent to secure the safety of the structure by binding it round at the springing-line of the arch, and elsewhere if necessary.

JAMES WYLSON.

* *Vide ante*, page 222.

BALMORAL CASTLE (the late retreat of the Queen) is a large house, of modern structure, situated on the south bank of the Dee, about fifty miles from Aberdeen. The house consists of a centre, square and lofty, and of two wings: projecting windows and balconies give an extensive and beautiful prospect. The rooms of the house are spacious and handsome for a country residence, but not too many in number, and dressing-rooms are used as dormitories. Adjoined to the western wing is a conservatory, containing a good collection of exotics. Round the eastern wing is a garden about an acre in size, planted chiefly with roses and annuals. The house has been taken for the remainder of a lease of 27 years.

RESPONSIBILITY IN BUILDING.

RECENT ACCIDENTS.

The formation of overhanging cornices demands great care on the part of builders. The accident in this respect, at the soldiers' chapel in the Birdcage-walk, some time ago, is doubtless remembered.

The death of a man was caused a few days ago at the Scotch Presbyterian Church, in Bradford, by the overbalancing of a stone cornice, and the jury included in their verdict censure of the parties concerned in the superintendence of the building. The architects, Messrs. Mallinson and Healey, have addressed letters to the local papers disclaiming any part in the transaction, and urging justly that the jury ought to have heard their evidence, and as there was neither architect nor mason on the jury, they ought to have obtained competent professional assistance—"since they appear greatly to have misapprehended the duties and responsibilities of an architect, and confounded them with those of the builder."

The resident partner says,—

"I requested the builder to take the precaution of *weighting the cornice*, which, had it then been done, would have prevented its fall. Had I not given this warning, I should, nevertheless, not hold myself in the slightest degree responsible for what has occurred. The cornice had to receive upon it the weight of the pediment, which would have kept it in its place with much less hold on the wall than it actually had, and I am no more answerable for the neglect of its not being temporarily secured than I should be for the breaking of a rope, or the failure of a lewis. There are many cornices in this town, as well as in other places, which overhang the supporting walls so considerably, that they are only kept in their places by cramps: would any reasonable person hold the architect responsible for what might occur in the interval betwixt laying the stone and securing it with the cramp; yet in what do the cases essentially differ? Every contractor is responsible for the work in his own department, and he as well as his workmen must be presumed to exercise sufficient care to prevent injury to others, failing which it is only just that they should sustain the blame themselves."

Fixing Balconies.—A poor girl was seriously injured and nearly killed last week, in Percy-street, Pentonville, through a balcony, supposed to be fastened to the wall of the house, giving way. We have before this endeavoured to impress on builders the importance of care in securing such appendages. A committal to Newgate for manslaughter is one of the risks the careless in such matters run.

EXTINGUISHING FIRE BY EVOLVEMENT OF CARBONIC ACID GAS.

Sir,—I trust you will have the politeness to permit me a few lines in your journal, in reply to the letter of Mr. Dredge (inserted on the 30th ultimo), as I conceive there are inaccuracies and misapprehensions contained therein (to speak gently) which affect the soundness and practical character of my plan for extinguishing fires at sea. After summarily detailing my plan he remarks, "all this is perfectly correct in theory. *It is just in the application* where the difficulty lies;" and by way of illustrating this he refers to the imperfect state of combustion in furnaces generally, which, no doubt, demonstrates his idea of the discordance between theory and practice. For ourselves, we have always been of opinion, that there was a fallacy in the common axiom, as to the discordance between theory and practice; and, as chemists say, *fiat experimentum*, "test the plan by experiment." Has Mr. Dredge done this before he thought proper to pronounce his opinion on this matter? I have made many hundred experiments on the subject, in every form, mode, and shape, and *invariably* found the practice to correspond with the theory. A different result would give me much interest to investigate. Besides, I have proposed to different boards in different places, to demonstrate the truth of the *theory* by a variety of *practical* illustrations at twenty hours' notice; and should my other avocations permit, propose a public lecture on the subject. Mr. D. is in error when he states that 1 ton of timber will give 60,000 cubic feet of carbonic acid gas. Timber dried at 350° loses 15 per cent. of its weight; and 100 per cent. of the remainder contains about 45 oxygen, 5 hydrogen, and 50 carbon in round numbers, so that it will give little more than 24 or 25,000 cubic feet.

Further, there is a positive inaccuracy in the statement, "that a small portion, however, of atmospheric air is sufficient to keep alive combustion." If Mr. D. has made experiments on the subject, it would be desirable to know the result. Mr. Taylor, an experienced chemist, states combustion is almost invariably checked in an atmosphere of 80 parts atmospheric air and 20 of carbonic acid gas. My numerous experiments prove the same. It *cannot*, therefore, be concluded "that this would prove fatal to Dr. Reid's plan." As certain as air is necessary to respiration, so I conceive it is as certain that my plan practically, when efficiently adopted, will extinguish *all* combustion.—I am, sir, &c.,

William Reid.

DRAINAGE OF THE KENSINGTON NEW WORKHOUSES.

STATE OF THE SEWERS.

We have received the following from an influential member of the Kensington Board of Guardians, and know personally the facts of the case:—

Sir,—As a constant reader of "The Builder," I know that you take an interest in sanitary regulations, and that it is within your province to notice them.

I send you therefore the copy of a report from the surveyors of the Sewers Commission, in respect of an abominable nuisance in the shape of the common sewer, of which the guardians of this parish have complained, and which they constructed, at a large outlay, for the drainage of the new workhouse, under the promise that the outlet from it should be deepened.

When it is known that the sewer in question takes almost the whole of the drainage of the town of Kensington and its contributary streams of filth, and that its *solid matter remains as a deposit in the sewer*, the injurious effects of which are admitted, and their increase contemplated,—is it not an insult to common sense, in the face of Boards of Health and the expected arrival of the cholera, to be told nothing at present can be done, but that "shortly," "when," &c., &c., some remedy may *perhaps* be found.—Yours, &c.

October 3.

[Copy.]

"*On Barrow's-walk, Kensington.*—If the surveyors could recommend any large case as urgently requiring attention, this is one. A workhouse is built, to contain 400 to 500 inmates on an average, the drainage for which premises is into a new sewer, which stands full of foul water and deposits, the evils of which will be fearfully extended when the new workhouse is fully occupied.

The sewer was put in, very properly, at a level which, by lowering the outlet, would have free discharge. What is required, therefore, is the bringing up an improved outlet. The nearest point for such purpose is Warwick-road, a distance of 2,500 feet from the end of the new sewer. The inclination to be obtained is rather more than 5 inches in 100 feet. But however much the surveyors regret the adverse circumstances under which the workhouse drainage rests, they do not feel justified in recommending, at this moment, the carrying out of this work; but as they are led to believe that the general survey will be (very shortly) completed, when a general view will be taken of the drainage of the whole district, they trust that the state of things complained of above will not remain long without a remedy.

(Signed) "John Roe.
Henry Austin.
John Phillips.

September 21, 1848."

Zinc Labels.—Labels of an economical and durable kind may be made in the following manner:—Damp zinc labels with a solution of alum, and while they are damp, write the name you require, and you will find the letters, when dry, are very difficult to efface.—*Gardeners' Journal.*

RAILWAY JOTTINGS.

The Rother viaduct, near the junction of the Manchester, Sheffield, and Lincoln with the Midland, at Beighton, twenty of the thirty-six arches of which had been completed during the last twelvemonth, is now a mass of ruins, which, in falling, killed several of the workmen, and dammed up the river Rother so as to flood the whole neighbourhood. The piers having sunk fourteen inches and a half, the nineteenth arch was about to be shored up when it fell without further notice, followed immediately by 13 or 14 of those adjoining, and in a few minutes by the remainder. The piers still stand, but the water which overflowed the river during rains had found its way into their foundations, and hence the sinking, by a contingency which, surely, it would be natural to look for, and provide sufficiently against, on the banks or channel of *any* river, however usually moderate in its overflows. No close cutting of contract competitions can excuse such suicidal inefficiencies as these, even altogether irrespective of the question of the public safety. 'Rains' and 'overflows' are year after year blamed for such fatalities as if they were so unprecedented that no one would think of anticipating their destructive efficacy, or as if concrete and other available means were quite inadequate as safeguards and sureties against them. There is at all events clearly no sense in building up laborious and costly structures such as this *without* sufficiently guarding against the utmost possible limits of the power of such well-known agencies, wherever there is any risk of their occasional occurrence.——A portion of the hill near Yarmsworth Church, upon which the South Yorkshire line of railway and the spoil bank rests, has slipped several feet. The spoil bank, which runs parallel to the line, consists of redundant material from the cutting in the cliff. It is of great height and breadth, and is supposed to have caused the slip in question. ——We lately noticed an instance of accurate tunneling; here is one of another kind:—In a railway tunnel in course of construction near Huddersfield, which had been bored at each end, thinking that the excavators would meet in the centre (says the *Preston Guardian*), it was discovered last week, that through defective engineering, the two sets of workmen were passing each other, having got six yards asunder, instead of meeting face to face. The tunnel will be about 7-8ths of a mile in length, and should have consisted of a gentle curve, but now it takes the shape of a dog's hind leg!——The Great Western Company have discharged 250 men from their works at Swindon, and the whole of the men employed at their factory are now working on short time, and probably will have to remain on short time during the whole winter. The company, we lately observed, have been inviting lectures, at Swindon, on emigration or colonization. ——The atmospheric principle, during the time it was applied to the South Devon line, is said to have cost 108*l.* to carry 100*l.* worth of passengers. The workmen on this line are actively engaged between Lairn and Mutley tunnel.

ELECTRO-TELEGRAPHIC PROGRESS.

The autographic telegraph, if we may so call it, invented by Mr. Bakewell, and whereby "original writing, the character of which might be readily recognised," is copied at least, or written at second hand, if not at first hand, has been successfully experimented with between the metropolis and Slough, where it has been found that the same power which is requisite to work the needle telegraph is amply sufficient for the copying process. Messages written in London were received at Slough and copied on paper by means of a single wire and with double the rapidity of the needle telegraph. Mr. Bakewell, it is said, expects to be able to transmit *fac simile* copies of more than 400 letters of the alphabet per minute with a single wire; and, by using two wires as now practised, to have the rapidity doubled. ——A more perfect mode of insulation, by help of gutta percha, has been suggested by Mr. Hamerton, superintendent of the Electro-telegraph Company. The Gutta Percha Company itself, too, it seems, have found out the perfectly insulating properties of this perfectly protean substance, for which we fear more

uses are being discovered than its limited resources will long supply; more especially if it be true that to get at it the more readily and abundantly, the improvident Malays, emulant of the celebrity of the proprietor of the goose with the golden eggs, are now in the habit of exerting themselves in providing for the eagerly looked for supply to Europe—and America, too, we suppose—by cutting down the trees which supply it, in place of tapping them, as the prudent Yankees do their maple trees for sugar.

NOTES IN THE PROVINCES.

THE new market-house at Botley was opened on Monday week. The exterior consists of a portico, the pediment of which is supported by four Tuscan columns, and encloses an area paved with stone. The hall is 40 feet long by 25 feet wide, and 17 feet high, and is lighted by four windows. Mr. Charles Pink, of Hambledon, surveyor, supplied the plans. The cost was about 500*l.*——The new Corn Exchange and the public room at Saffron Walden are nearly completed, and the front of the new post-office is finished. ——Designs and estimates for a Corn Exchange and public room at Worksop have been called for.——Building at Stratford has been rather in an active state for several years. Numerous houses on the Plaistow road are in progress, and a new street, called Longthorne-street, opens a way to the station on the North Woolwich railway. Ninety villas are about to be erected in the Romford-road.——The Glasgow iron-founders have secured the extensive contract for the water-pipes of the town of Liverpool. Thirty thousand tons will be required. The contract is taken up by four firms, and will amount to about 130,000*l.* Price 4*l.* 10s. per ton.——A large chimney connected with the works of Messrs. Hayes and Co., soapboilers, Preston, fell on Monday, killing a little son of one of the proprietors and breaking the leg of a man who happened to be near. The foundation was defective. ——It appears that there are now in Bradford 1,300 unoccupied houses and shops, assessed at about 4*l.* per annum, and representing a total rateable value of nearly 12,000*l.*——At the last general meeting of the Hull Glass Company no dividend was declared, but the report showed that the present Directors had, to an extent beyond expectation, overcome the difficulties of the concern, and that the works had been resumed with the prospect of success.——A gaswork for the use of the North British Railway at Edinburgh is being built at a short distance from their extensive works at Meadow Bank. The exterior is of stone.

CHURCHES AND CHAPELS.

THE new synagogue at Canterbury, built, by retribution, as it were, upon the site of a razed edifice belonging to their ancient mortal enemies, the Knights Templars, was consecrated on Tuesday week by the chief Rabbi, Dr. Adler. ——Preparations are in progress in the dismantling of Holy Rhood Church, Southampton, for its re-erection. It is said to be just 500 years since this venerable edifice was last rebuilt, and the *Hampshire Advertiser* remarks that he lately read the date 1011 on a sepulchral stone taken from the pavement of the previous church, and used in the last rebuilding. Such a serviceable old slab deserves a prominent place in the next re-edification. The contract for the new erection is for 2,365*l.*, and the whole cost, with extras, will be increased to 3,000*l.*, of which the Exchequer lends 2,000*l.*, and of the rest 900*l.* have been promised. —— The chapel of St. Michael, recently erected in connection with Marlborough College, was consecrated on Friday week. It has been erected from designs by Mr. E. Blore, architect, in the early middle pointed style, with high pitched roof, seats for 600, and plain interior. The cost was about 7,000*l.*——A new Roman Catholic chapel is about to be erected at Liverpool, it is said, in memory of the priests who sacrificed their lives in attendance on their poor parishioners during the raging of the 'Irish fever' there.——The Norman church of Stoke Prior having been repaired and restored, was re-opened on Wednesday week. The south transept, formerly bricked up, has been laid open; a gallery, which obscured the western window, taken away; the whole church repewed with oak sittings, 114 additional, free; the old oak roof laid bare; the whitewash on the stone arches removed; great part of northern aisle rebuilt, &c.; cost about 500*l.* The superintendence was committed to Mr. H. Eginton, of Worcester, and the work was executed by Mr. Moss, of Bromsgrove.——St. Paul's Church, Manningham, is a cruciform structure, in the later period of the English style, with nave and aisles, transepts, chancel, and a tower and spire springing from the intersection, and supported within by clustered columns and arches. The nave is decorated with stained glass by Messrs. Barnettt and Son, of York,—one of the lancet lights, a contribution by the architects, Messrs. Mallison and Healey. The sum of 3,000*l.* was contributed towards the erection of this church by Mr. John Hollings.——The church of Sigglesthorne was re-opened on 21st ult. The gallery has been removed, the tower thrown open, the high box-like pews replaced by open seats, greater part free. The alterations were designed by Mr. L. Pearson, architect, and the work was executed by Messrs. Whitton, mason, of Beverley; Barr, capenter; Clappison, blacksmith, of Sigglesthorpe; and Grantham, bricklayer, of Hornsea. The windows, except one at east end, were supplied by Mr. Wailes, and the church is heated on the Polmaise plan by Messrs. Seward, of Lancaster.

METROPOLITAN COMMISSION OF SEWERS AND THE SEWAGE MANURE COMPANY.

AN extraordinary court was held at the Sewers'-office, Greek-street, Soho-square, on Friday, Lord Ebrington, M.P., in the chair, for the purpose of taking into consideration a communication received from Mr. Roe, surveyor, to the effect that the Metropolitan Sewage Manure Company had cut through the bank of the Counters' Creek Sewer, for the purpose of connecting a pipe with the sewer, contrary to the warning given them to desist from the attempt, and that the trench thus cut was 10 feet wide, and the bottom thereof nearly as low as low-water mark.

It may be remembered by the readers of this journal that towards the latter end of the year 1847, the Westminster Commissioners of Sewers passed a resolution to this effect on the application of the company:—"That the application of the Metropolitan Sewage Manure Company submitted to the court this day, being a diversion of the sewage from the Ranelagh Sewer and the intervening sewers to the Company's intended station at Stanley-bridge, Fulham, and as shown by the plans deposited, be agreed to, the works from time to time being executed under the direction, and to the satisfaction, of the commissioners and their officers." Within a few weeks application has been made to the present commissioners to allow the company to divert the sewage of another main line of sewer (the Counters' Creek Sewer), which permission the commissioners refused to give, on the ground chiefly of the extravagant expenditure of the shareholders' money, when notice was given by the solicitor of the Company, that "*the Directors had determined on making the communication.*"

Upon the receipt of this the commissioners lost no time in directing their clerk to send notice, in reply, that they refused their consent to the work.

Notwithstanding this communication the work was commenced, a trench being cut into the sewer by the agents and workmen of the company.

After some discussion the following resolutions were carried unanimously:—

"That a fine of 500*l.* be imposed on the Metropolitan Sewage Manure Company, for having (without having first obtained the sanction of the Commissioners of Sewers), cut through, or caused to be cut through, the western bank of the Counters' Creek Sewer, commonly called the Kensington Canal, as reported to the commissioners by their surveyor, and proved upon oath before them, in court assembled, this day.

"That the said fine be paid to Mr. Lewis Cooke Hertslet, the clerk of the court, upon demand.

"That a fine of 50*l.* be imposed on Thomas Docwra, of Cheshunt, Hertfordshire, the contractor, for having (without having first obtained the sanction of the Commissioners of Sewers), cut through, or caused to be cut through, the western bank of that part of the Counters' Creek Sewer commonly called the Kensington Canal, as reported to the commissioners by their surveyor, at their meeting held yesterday, and proved upon oath before them, in court assembled, this day."

"That the surveyor do forthwith proceed to repair and amend effectually, for the protection of the public, the western bank of the Counters' Creek Sewer so cut through, as above-mentioned, and that the cost thereof be paid by the Metropolitan Sewage Manure Company."

It was stated that if the plan of the Company had been allowed to proceed, several hundred acres of land would have been flooded.

Correspondence.

PROTECTION OF PILES IN SEA WATER—INQUIRY.

SIR,—Among the many existing schemes at the present day for the protection and preservation of piles, I should feel obliged if any of your correspondents can inform me of that which has been put to the strongest test, and has stood it effectually.

A plan was proposed some time since by Sir Samuel Brown, which I believe has been partially carried out: it was simply by covering the surface of the timber with broad-headed iron nails, which, shortly after their immersion in the water, form an armour of rust, so that insects cannot penetrate, and the heads being made square, the size of the interstices between them are reduced to a minimum.

For temporary purposes, a soluble paint mingled with arsenic will prevent their attacks as long as the paint lasts, and the same may be said of copper. The discovery of any antidote relative to the preservation of timber so exposed would be an important achievement, as the devastation committed by the *teredo navalis* is very great.—I am, Sir, &c.,

G. J. R.

Miscellanea.

THE DON BRIDGE ON THE NORTHERN RAILWAY.—The pile-driving at the Don-bridge is completed, and the masonry work for the abutments commenced. We learn from the *Doncaster Chronicle*, that the bridge will be constructed of wrought-iron, on the principle of Fairbairn's patent hollow bridge, and will consist of two hollow iron girders, which will span the stream, transverse girders for the rails to rest upon, and iron-plate sides. The bridge will be 5 feet 6 inches high in the middle, 4 feet 8 inches at the ends, the side plates being only 5-16th of an inch thick; the plates at the bottom of the bridge are 9-16th of an inch thick. All these will be firmly riveted together, to form a rectangular beam. The bridge will be remarkable chiefly for its combination of lightness with strength and durability. The principle of construction is the same as that adopted at Conway, and which is now being very generally adopted for railway bridges. The span of the bridge will be 70 feet.

THE BRIDGE OVER THE NEW CUT on the same line (near Doncaster) will consist of two brick piers—one on each side—with stone quoins, built upon piles, sunk four feet below the natural surface of the stream. From these piers will be thrown cast metal circular tubes, instead of the usually solid girders, and upon the tubes the permanent way will be laid. At present the foundation of the south pier only has been laid, but as all the piles for the other have been driven, not a long time will elapse before it is commenced. Mr. Moody is the sub-contractor for this and the other bridges.

CAUTION TO BUILDERS.—On Saturday evening, a child, two years and a half old, son of a mechanic, of Great Garden-street, Burmantofts, was drowned by falling into a tub of water which had been used by Charles Wray, bricklayer (who is building some houses in the neighbourhood), for the purpose of slaking lime. The tub was inserted into the earth, the top being on a level or nearly so with the surface of the ground, and had been left without any covering. The deceased child had strolled from its parents' house only five minutes before it was found in the tub, but life was quite extinct.

FIGURES.—Sir: The property of figures, mentioned in a paragraph in your last number but one, may be shewn to hold true for all cases by a very simple algebraic operation:—

Let n = any number; then

$$n^2 + 1 = n^2 + 1$$
$$n^2 = n^2 - 1 + 1$$
$$n^2 = (n + 1)(n - 1) + 1$$

Old Ford. E. F.

Projected Works.—Advertisements have been issued for tenders by 18th inst., for the erection of two houses at Camden-town; and by 31st, for cast-iron pipes, sluice cocks, and other iron works for the Folkestone Water Works Company.

Day, the Architectural Modeller.—There are few architects who are not acquainted with the admirable models made by Mr. Day. We are sorry to hear, that after struggling for some years to make a living by the practice of his art, he finds his efforts fruitless, and that he must either seek some other occupation or starve. It seems sad as well as surprising, that with the ability he has acquired in this particular path he should not be enabled to maintain himself by the exercise of it. Some of our readers may, perhaps, be disposed to aid him.

St. Marylebone Baths and Wash-houses—Laying the Foundation-stone.—The foundation-stone of this institution has been laid. The building will adjoin the St. Marylebone County Court, and in architectural character is Italian. The design is that of Mr. C. Eales, and is to be carried out by Messrs. Haynes and Co., builders. The cost for the building is put down at 13,000*l.*, to include all the fittings, which are adapted to 126 baths of different classes, and 86 washing-tubs.

Premiated Design for Labourers' Cottages.—In reply to the offer of a premium of 10*l.* offered by a correspondent of the *Art-Journal* for the best design for a pair of labourers' cottages, twenty sets of drawings were submitted. From these five were selected, marked C. & A.; J. C. N.; J. M. McC.; Utility; and W. N. G. Ultimately the premium was awarded to the first of these, the work of Messrs. Curtis and Allason, of Trinity Church, Charing-cross. The selected design will be published in the *Art-Journal*. None of the designs displayed any great advance over others already published. The design marked "W. N. G." has some points of considerable merit: should the journal in question not engrave this we would willingly do so.

St. Osmund's Roman Catholic Church, Salisbury, was opened on the 6th inst. The style is Early Decorated. The church consists of nave, chancel, and south aisle, having a chapel at east and tower at its west end. The latter is finished with a low broach spire, covered with tiles. The organ gallery is over the sacristy, at the south side of chancel, opening into the church in the chancel and east end of aisle. The altars, pulpit, and font are of stone, elaborately carved, the two former relieved by painting and gilding. The windows in chancel and Lady Chapel are all filled with stained glass, by Hardman, of Birmingham. Chancel and chapel are separated from the nave and aisle by oak screens, the former being surmounted by the Crucifixion, and Mary and John: the chancel roof is pannelled, and richly painted and gilt. The body of the church is filled with low open benches, of a simple but substantial character. The exterior of the church is built of flint, with stone quoins. Mr. Pugin is the architect; the flint and brick-work by Messrs. Crook, of Whiteparish; the stonework and plastering by Messrs. Lane, of Chilmark, and roofs and woodwork by Mr. Fisher. The accommodation is for 300, and the estimated cost between 2,000*l.* and 3,000*l.*

Completion of the Paris Louvre.—M. Visconti is, we believe, empowered to proceed with the completion of the Louvre. The Paris *Illustration* lately published a large number of the different plans which have been submitted for uniting the Tuileries and the Louvre, beginning from a very early period. It has been proposed to line the *Champs Elysées* with a row of statues on each side, commemorating the great men of France.

Liverpool Timber Trade.—The arrivals from America during September, are comprised in 32 vessels, 21,156 tons, against 38 vessels, 18,375 tons, in the corresponding month last year. So far the import is fully an average one, being in excess of both last year and the year before up to the same period. For St. John pine timber the price is well sustained, as also for Quebec. Spruce deals continue very much depressed. There is still considerable complaint of the want of country demand.

The Bedfordshire Archæological and Architectural Society held their second public meeting at Bedford, on Tuesday week, the Hon. George Rice Trevor, M.P., a vice-president, in the chair; when various letters were read, and a circular, with queries by the council, on various points relative to the state of churches, was exhibited. Mr. French read a paper on Ancient Egypt, and Mr. C. L. Higgins exhibited several bricks from the pyramids, made of earth and straw. Mr. Inskip then read a paper on the archæology of Bedfordshire, and various antiquarian specimens were afterwards handed round.

The Church of St. Isaac, at St. Petersburgh.—Mr. Anderson, known as the "Wizard of the North," gives in a sketch book which he has published the following rose-coloured notice of St. Isaac's Church, in the Russian capital, which has been fifty years in progress, and is still unfinished:—It has four fronts, each of which has its pediment supported by Corinthian pillars. The whole exterior of the church is of polished Finland granite, and each of the four fronts is formed of twenty-four pillars of the same material, red-coloured, and beautifully polished, the base and capital of the several pillars being bronze. On the entablature of every pediment is a bronze casting, illustrative of some portion of scripture history—the figures of which are twice the size of life. The entire structure is surmounted by a dome and minarets, which seem to rise up into the clouds, and the effect of the whole is grand and imposing. But if the outside of the building is rich and striking in appearance, what can one say of the interior? It is at once gorgeous and awe inspiring. The church on the inside is supported by one hundred and twenty-five pillars of malachite, a green stone of immense value: each column is twenty-five feet in height by three feet in circumference, with bases and capitals of solid gold, while the altars, which are covered with burnished gold, sparkle with thousands of diamonds.

Sculpture and Drawing in Wales.—The Cymreigyddion have offered, amongst the prizes to be awarded at the next Eisteddfod, a premium of 70 guineas for the best model in plaster, illustrative of the Cambro-British history, from either of the following subjects:—"1. The escape of Gruffydd ap Cynan, from Chester, borne by Cynfrig Hir; 2. Blegwryd, Archdeacon of Llandaff, sitting with Hywel Dda and his Counsellors at Ty Gwyn a'r Dâf, preparing the code of laws known as 'Cyfreithiau Hywel Dda;' 3. The Death of Tewdric, King of Gwent, in the moment of victory over the Saxons at Mathern on the Wye; 4. Ifor Bach, after storming Caerdiff Castle, leading Robert Consul and other Norman prisoners to his mountain fortress, Castell Coch." This is the first prize, we are informed, ever offered by an institution of this character *for encouragement of native artists in sculpture*. A prize of ten guineas is offered "for the best cartoon of the subject of Brân Fendigaid (the blessed) introducing Christianity into Britain, accompanied by Ilid Sant, who preached the Gospel to the men of Glamorgan; Druids standing by the side of a Cromlech frowning at the new doctrine; the old king wearing the aurdorch and talaith."

A Note for Auctioneers.—At Bolton county court, on Friday, the judge allowed a defendant to set off a claim which he had against a party who had sold his goods by auction, and a portion of which were bought by defendant. The action was brought by the auctioneer on the occasion. His Honour said though the auctioneer had a right to sue, he must do so subject to the claim of the defendant against the owner of the goods.

New Patent Iron Girders.—Mr. J. H. Porter, of Blackheath, engineer, has taken out a patent for girders, on a principle asserted to realise strength of form and substance with the least possible amount of metal, and greatly reduced cost. The patent consists in the application of corrugated iron—whether in curved or angular lines, and for parts of cylinders, or tubes, with compression lengthwise—to the formation of beams, girders, trusses, or supports, generally; and in the particular application of said iron,—with the corrugations both vertical and horizontal—to the rendering of floors of buildings fire-proof.

Competition.—Plans and estimates are wanted from architects for a church at Halifax for 1,100 persons, at a cost not exceeding 4,500*l.* Premiums, 10*l.*, 7*l.*, and 5*l.*, with other terms, as advertised.

Lectures on Perspective.—The first of a course of lectures on "Perspective" was delivered at the Society of British Artists, by Mr. John Saddler, on Tuesday evening last (3rd inst.) The lecturer shewed that objects were viewed by the uninitiated in their abstract and not perspective form, and the necessity, therefore, of its study was insisted upon by a reference to the alteration of the circle, domes, &c., in perspective; "geometrical definitions; theory and practice of perspective explained; some observations upon the horizontal line and vanishing points, &c.; Problem 1, to draw a line in perspective; Problem 2, to draw a square in perspective; Problem 3, to draw a pavement in perspective—the application and importance of this problem to the historical painter." The second lecture, to be given on the 10th, will treat of "Problem 4, to draw a cube in perspective—its application; Problem 5, to draw a parallelopiped in perspective—its application; Problem 6, to draw a pyramid; Problem 7, to draw an octagon; Problem 8, to draw a row of houses; Problem 9, to draw a house with roof inclined to the horizon; to draw lines to a point which is out of limits of the picture."

Condie's Patent Steam Hammer.—An improvement on Mr. Nasmyth's hammer has been patented by Mr. Condie, and introduced at Mr. Dixon's iron works, at Govan, near Glasgow. It has a stroke of 3½ ft., with a weight of 41 cwt., and has been constantly at work, night and day, since March, and, including scrap furnaces, has kept, it is said, as many as fourteen puddling furnaces in full work during the whole of that time. The manager declares that "the tool will pay its own cost in the first year." The framework of this hammer, which is about 14 ft. high, is not very dissimilar to that of Mr. Nasmyth. Instead, however, of a cylinder standing upon the cross frame at the top of the two side bearers, a piston-rod descends from the head frame. This piston-rod is held by a ball and socket joint to the head frame-work, and the cylinder, to the lower end of which is attached the ram, moves up and down, supported by the side frames. The steam is fed into the cylinder down through the centre of the piston-rod. Mr. Condie's hammer is considered to be not liable to the same risk of breaking by concussion as that of Mr. Nasmyth's, and the cylinder and hammer (measuring together about 6½ ft., with grooves in each side), sliding on feathers on the side frames, move throughout almost without oscillation.

TENDERS

For the erection of the Birmingham Free Industrial Schools. Mr. M. C. W. Orford, architect.

Davis	£2,650
Bradshaw	2,636
Cresswell	2,490
Heathfield	2,465
Branson and Gwysher	2,400
Briggs	2,330
Wilson	2,250
Turner	2,178

For rebuilding a portion of a Villa, at Taplow, Berks. Mr. Richard Tress, architect.

Brown, College-hill	£2,996
Piper, Bishopsgate	2,850
Herd, Paddington (accepted)	2,526

TO CORRESPONDENTS.

"*Drying Rooms.*"—In reply to our correspondent who asks to know the best means of drying wood, a correspondent wishes us to remind him of the Patent Desiccating Company's process, which is said to render wood fit for use in a few days.

"*Bridgewater House.*"—Our arrangements do not permit us to comply with the request of "P." at this moment. The lines between the corridor and the principal staircase shew portion of the skylight over. The staircase is lighted wholly from the top. The fire-places in gallery are as shewn.

"*C. Z.*"—The profit (say 20 *per cent.*) is added to the cost.

"*B. W.*" (Bristol).—Apply to secretary of Society of Arts, John-street, Adelphi.

"*Delta.*"—Apply to the manufacturers themselves.

"*Site for the Arch.*"—For half a dozen suggestions on this subject we have not room.

"*R. S. D.*"—We cannot say anything of the invention in question.

"*Correspondent.*"—The duty is 5s. 10d. per thousand.

"*W. H.*"—Stone may be porous, yet very hard.

"*Received.*"—"J. P." "X. Y. Z.," "C. B.," "R. J. H." (thanks: we did without), "E. F.," "L. and B.," "Monsieur H. de G.," "W. H.," "W. J." (apply to Mr. Newlands, Liverpool), "W. S.," "W. H.," "Subscriber," London (the medals of the institute are *not* confined to members), "J. B.," "J. C.," "T. F. and T." (Mr. White's address is 9, Lincoln's-Inn Fields), "S. W.," "W. T.," "Archi," "J. M." (the substance of letter to the *Times* appeared in Builder long ago), "S. S. S.," "C. E." (we have not time to call), "J. G." (a similar plan was suggested in The Builder some time ago), "R. K." (trenches

a little on a subject in hand, but *n'importe*), "A. B.," "G. R. C.," "Constant Subscriber" (there is, or was, one of the bell-indices, so to call it, at the Society of Arts, Adelphi), "A Youngster" (apply to 19, Hanover-square, London), "X. Y. Z." (ditto), "J. M'D." (ditto), "Working School" (we are unable to recommend a school), "Rev. J. L. P.," "Dr. M.," "Subscriber," "M. A. A.," "J. M." (a remission of the duties may be obtained: the committee are entitled to the advantage), "Ingenieur," "J. H." (declined with thanks), "W. C. F." (steeping in lime water, or anointing with oil is considered useful), "W. C." (there are no arbitrary proportions), "S. E. P." (Peel's Coffee-house, Fleet-street, or the Hall of Commerce), "Aliquis" (next week).—"Contractors' and Builders' Pocket Guide," by E. V. Gardner, second edition (Trelawney and Saunders); "Is Cholera Contagious or not?" by W. Reid, M.D. (London, Highley); "The Westminster Review," "Blackwood," "Anglo-Jewish Magazine," "Dolman's," "Man in the Moon," "Milner's Atlas of Astronomy" (part 6); "Companion to the Builder's Friend, by Henry Fitzgerald, being the last List of Sawyers' Prices of Work, as agreed between Masters and Men in London" (Purdy, Yarmouth).

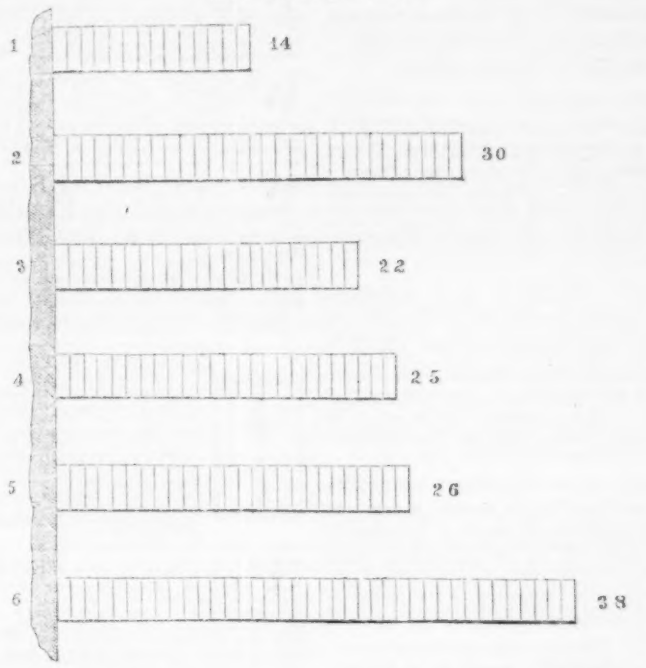
"*Books, Prices, and Addresses.*"—We have not time to point out books or find addresses.

[Advertisement.]

THE STRENGTH OF PORTLAND CEMENT.

MESSRS. ROBINS, ASPDIN and Company announce the result of the *public experiments* made with their Portland Cement, in the presence of many professional and scientific gentlemen, at Scotland-yard, on Monday, the 18th ult., and by adjournment at Messrs. Robinson and Sons (late Bramah and Robinson), engineers, Pimlico, on Tuesday, the 26th ult.

First Series of Trials.



No. 1. All Cement.—14 bricks bore a weight of 9 cwt. for some minutes, a small additional weight being added, broke in the brick.

No. 2. 1 Cement to 1 Sand.—30 bricks, with 8 lb. weight on the last brick, stood till 7 lb. weight added, when the bricks broke in three places.

No. 3. 1 Cement, 2 Sand.—22 bricks, broke in the bricks, after weights to the amount of 1 58 lbs. put on the 22nd brick.

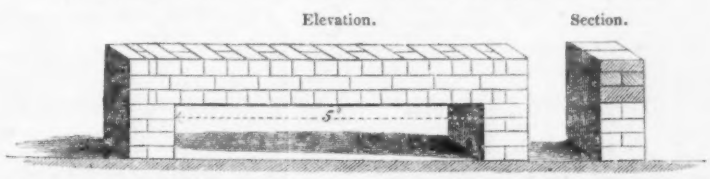
No. 4. 1 Cement, 4 Sand.—25 bricks, sustained 56 lb. on the 25th brick till brick broke.

No. 5. 1 Cement, 5 Sand.—26 bricks, 56 lb. put on the 26th brick, stood 15 minutes, the weight increased to 74 lb., when a brick broke, with slight accidental pressure.

No. 6. All Cement.—38 bricks, with weight on 38th, equal in all to 40 bricks, broke in the brick, with small additional weight.

Second.

Brick beam, three courses deep, tested on 27th day after formation.



All Cement.—Loaded by degrees with 58 cast-iron bars, or 2 tons 18 cwt., when the bricks broke across in two places. A fragment picked up consisted of a splinter from four bricks, with the cement like stone, combining them in a cruciform shape.

1 Cement, 3 Sand.—Split partially in the bricks under a weight of 47 cwt., but did not break down till struck repeatedly with a sledge hammer.

1 Cement, 5 Sand.—Weight on the beam 31 cwt.

1 Cement, 6 Sand.—Weight on the beam 24 cwt., it broke in six out of nine bricks, having been accidentally struck.

Third.

Two pieces of the best Portland stone, united with Portland Cement, the stones being 2 feet long by 9 inches broad in superficies, having been cemented together for twenty-eight days, the whole slung on a bearing 3 feet 6 inches across, between two pairs of dogs or nippers, with a weight scale below, in an elevation of 11 feet in height.

The stone scaled and broke under a weight of 38 cwt., the lower stone leaving the cement nearly entire, with a stony scaling over its surface above.

Fourth, tested by Bramah's Hydraulic Press.

A small piece of *Pure Cement*, 1¼ inch surface by 1 inch, six months old, and laid on its inch surface, withstood pressure till partially crushed at 18 tons 3 cwt.

A small piece of *Portland stone* of the same size, crushed under a pressure of 23 cwt.

Blocks of cement and cement and sand.

18 inches long × 9 × 9 inches, placed vertically.

All Cement.—Twenty-eight days old; pressure, 58½ tons.

1 Cement, 1 Sand.—Do.; pressure, 47 tons.

The hydraulic press not being powerful enough to test the strength of the pure cement and its slighter mixture with sand, the meeting was adjourned till the 26th ult., when one of the previous blocks, all cement, then thirty-five days old, bore a pressure of 68 tons, when it cracked at one angle, but ultimately bore a pressure of 90 tons previous to its breaking down.

An exactly similar block bore 104 tons.

Another block of the same size and age, bore a pressure of *one hundred and forty-one tons*, and stood under such pressure upwards of a minute, when it broke up with a report!!

The block, 1 cement and 1 sand, previously submitted to a pressure of 47 tons, now cracked or severed in the centre at that pressure: the two pieces ultimately bore a pressure of 108 tons before breaking down, the form of the crack not altering.

Certificates, signed by many highly respectable professional and scientific gentlemen present at the trials, may be seen at the Counting-houses, Great Scotland-yard, Whitehall.

Messrs. Robins, Aspdin, and Company submit the foregoing experiments and tests to the public, without deeming it necessary to make any comment or observations beyond referring them to the experiments on the strength of cements, published in THE BUILDER on the 15th and 22d days of July last, by comparison with which the great superiority of Robins, Aspdin, and Company's Portland Cement will be manifest and apparent.

ADVERTISEMENTS.

J. MASON begs to call the attention of the Nobility and Gentry to his superior Collection of Terrace Pieces, Garden and Pleasure Ground Vases, Flower Pots, Fountains, &c. &c. Also Architects, Surveyors, and Builders to a great variety of Perforated Ornaments, for Parapets, Balconies, Terraces, and Garden Walls. Capitals, Trusses, Consols, Chimney Shafts, and other Ornaments, &c. Coats of Arms finished in a superior manner, all at half the usual price.—23, Providence-row, Finsbury-square, from Albion Wharf, Blackfriars-bridge.

TO BUILDERS, ARCHITECTS, AND THE TRADE.

WROUGHT-IRON LANCASHIRE HINGES of every description supplied at the lowest prices by JOHN SUMNER, Hinge Manufacturer, Ashton, near Warrington.

*** Lists of prices forwarded on application.

CAST-IRON PIPES, IRON WORK FOR OVENS, &c.

RAIN PIPES, &c.—F. A. TIDDEMAN, Purfleet Wharf, Earl-street, City, near Blackfriars-bridge, keeps a large stock of Rain Pipes, Heads, Shoes, Elbows, &c., half round and O. G. Gutters, Socket Pipes for Water or Gas, Flanch Pipes, Sash Weights, and other Castings; Iron Work for Baker's Ovens of every description, fitted complete, to be had in sets or in parts.—Prices equal to all competition. Contracts taken to any extent.

TO BUILDERS AND OTHERS.

RAIN-WATER PIPES, heads, shoes, and elbows, half-round and O G gutters, sash weights, railing bars, sink and stable traps and gratings, air bricks, close and open coal plates, scrapers, tile lights, balcony panels, barrow wheels, &c.

GAS and WATER-PIPES, bends, branches, Tee pieces, syphons, and lamp columns; also hot-water pipes for heating buildings and hot-houses, and FLANGE PIPES, with all the usual connexions. A large stock of the above CASTINGS at very low prices, at JONES'S, Iron Bridge Wharf, No. 6, Bankside, Southwark.

LAP WELDED IRON TUBES.—W. H. RICHARDSON, Jun., and Co., MANUFACTURERS of every description of WROUGHT IRON TUBES for Locomotive and Marine Boilers, Gas, Steam, and other purposes.
PATENT TUBE WORKS, DARLASTON, STAFFORDSHIRE.

NAILS and IRONMONGERY from BIRMINGHAM.—To BUILDERS, ARCHITECTS, &c.—Nails, Locks, and every description of Builders' Ironmongery, of the best quality, supplied at the lowest Birmingham prices, by FREDERICK BLYTH, Patent Cut Nail Manufacturer and General Factor, Edmund-street, Birmingham. Lists of prices forwarded upon application.

IRON FOUNDRY, 9, Brick-lane, Old-street, St. Luke's.—J. J. JONES having made great additions to his STOCK OF PATTERNS, begs to inform the Trade, that he can now supply them with Plain and Ornamental Iron Columns, Girders, Railings, Gates, Iron Coping, Balconies, Window Guards, Verandahs, Ornamental Staircase Panels, Iron Staircases, Tomb Enclosures, Trellis Panelling, Lamp and other Brackets, Cantilevers, Newel Bars, Water Closet Work, Area Gratings, Ply and other Wheels, Wheel Plates, &c.

BAKER'S OVEN WORK, Forge Backs and Troughs, Rain Water Pipes and Gutters, Sash Weights, Furnace Bars, Stoves, Ranges, &c., always in stock.

IRON FOUNDRY,
168, DRURY-LANE, and CHARLES-STREET, DRURY-LANE
JOSEPH GLOVER,

Solicits the attention of the Trade to his extensive Stock of PATTERNS for CASTINGS of EVERY DESCRIPTION, consisting of those for every purpose, either structural or ornamental.

Wheel Pinion and Steam-Engine Patterns; Range Stove and Hot Plate Metal.

A stock of Rain-Water Pipes, Plain and O G Guttering, Air Bricks, Sash Weights, &c. &c.

A very superior description of Soot Door, particularly suitable for internal work, being perfectly secure, and not unsightly.

ESTIMATES given for IRON ROOFING and every description of Ironwork, complete to specification, and the work executed with every attention to quality and dispatch.

GLOVER'S FOUNDRY,
168, DRURY-LANE, and CHARLES-STREET.

FLEXIBLE INDIA-RUBBER PIPES AND TUBING,
For Railway Companies, Brewers, Distillers, Fire Engines, Gas Companies, Gardening and Agricultural purposes, &c.

THE PATENT VULCANIZED INDIA-RUBBER HOSE-PIPES are made to stand hot liquor, and acids without injury—do not become hard or stiff in any temperature (but are always perfectly flexible) and as they require no application of oil or dressing, are particularly well adapted for locomotive engines, railway cranes, fire engines, pumps, gas, beer engines, gardens, and all purposes where a perfectly flexible pipe is required. Made all sizes, from ¼ inch bore upwards, and of any length to order. Vulcanized India rubber garden hose fitted with brass-taps, copper branch and roses complete, ready to be attached to pumps, water-butts, or cisterns. Sole manufacturer, JAMES LYNE HANCOCK, Goswell-mews, Goswell-road, London.

N.B. Vulcanized India-rubber washers of all sizes for joints or hot-water and steam pipes, and vulcanized sheet rubber any thickness for all kinds of joints, and other purposes.

GALVANIZED IRON FOR ROOFING, &c.—The Galvanized Iron Company beg to direct the attention of architects, surveyors, builders, and others, to their Patent Galvanized Iron, which is peculiarly adapted for ROOFING and BUILDING PURPOSES, especially for Tropical climates, being cheaper and more durable than zinc, lead, tin, or any other metal, calculating weight and strength. This fire-proof material has been used for roofing the new Houses of Parliament, shipbuilding and timber sheds in her Majesty's dock-yards of Deptford, Woolwich, Chatham, and Portsmouth; and at many of the principal Railway stations, gas works, &c. &c. This material is also admirably adapted for the construction of conservatories, fire-proof buildings, chain and wire rope bridges, corrugated doors, shutters, &c. &c. Specimens may be seen, and every information obtained at the Offices of the Company, No. 3, Mansion House Place, City—London. Works at Millwall, Poplar, Middlesex; Broad-street, Birmingham; Cobyn's Hall, near Dudley.

TO ARCHITECTS AND BUILDERS.

CHUBB'S WROUGHT-IRON and FIRE-PROOF DOORS and FRAMES, for strong Rooms. A large stock of the above, of all sizes, made in the best manner, and of different strengths, fitted with CHUBB'S PATENT DETECTOR LOCKS, throwing from two to twenty bolts, constantly on sale, at very moderate prices. FIRE-PROOF SAFES of every size, and Patent Detector Locks and Latches for all purposes.—C. CHUBB and SON, sole Manufacturers, 57, St. Paul's Churchyard, London.

PRO BONO PUBLICO.

CAUTION to Purchasers of FIRE-PROOF DOORS for Strong Rooms, Safes, Chests, and Detector Locks, &c. &c. LEADBEATER, many years manufacturer for Chubb.

LEADBEATER begs most respectfully to inform Architects, Surveyors, Builders, &c., that he can supply them with IMPROVED DETECTOR LOCKS for universal purposes, STRONG WROUGHT IRON FIRE-PROOF DOORS, SAFES, and CHESTS, &c., on the most improved principles of security against FIRE and THIEVES, without the aid of "expensive machinery," which is employed by some inexperienced makers, but must be paid for; at prices 25 per cent. under any other house in London.

LEADBEATER offers ONE HUNDRED POUNDS reward to any person who can pick his improved detector locks or latches. Some thousands of Leadbeater's strong-room doors and safes have now been put up without a SINGLE COMPLAINT, and fifteen years' practical experience, during which he has adapted every possible improvement to real security, enables him to challenge competition with any house in London. A large assortment of all sizes on sale and made to order. A pair of extra strong wrought-iron fire-proof folding-doors with ventilating gates, made expressly for a banker's strong room, may be viewed at his manufactory. Strong wrought-iron doors for party walls, with wrought-iron rabitted frames, and secured by the BEST DETECTOR LOCKS in ENGLAND, 6 feet high by 2 feet 2 inches wide and upwards, price 15l. each, always on hand at LEADBEATER'S MANUFACTORY, 25, ALDERSGATE-STREET, LONDON.

Projected Works.—Advertisements have been issued for tenders by 18th inst., for the erection of two houses at Camden-town; and by 31st, for cast-iron pipes, sluice cocks, and other iron works for the Folkestone Water Works Company.

Day, the Architectural Modeller.—There are few architects who are not acquainted with the admirable models made by Mr. Day. We are sorry to hear, that after struggling for some years to make a living by the practice of his art, he finds his efforts fruitless, and that he must either seek some other occupation or starve. It seems sad as well as surprising, that with the ability he has acquired in this particular path he should not be enabled to maintain himself by the exercise of it. Some of our readers may, perhaps, be disposed to aid him.

St. Marylebone Baths and Wash-houses—Laying the Foundation-stone.—The foundation-stone of this institution has been laid. The building will adjoin the St. Marylebone County Court, and in architectural character is Italian. The design is that of Mr. C. Eales, and is to be carried out by Messrs. Haynes and Co., builders. The cost for the building is put down at 13,000*l.*, to include all the fittings, which are adapted to 126 baths of different classes, and 86 washing-tubs.

Premiated Design for Labourers' Cottages.—In reply to the offer of a premium of 10*l.* offered by a correspondent of the *Art-Journal* for the best design for a pair of labourers' cottages, twenty sets of drawings were submitted. From these five were selected, marked C. & A.; J. C. N.; J. M. McC.; Utility; and W. N. G. Ultimately the premium was awarded to the first of these, the work of Messrs. Curtis and Allason, of Trinity Church, Charing-cross. The selected design will be published in the *Art-Journal*. None of the designs displayed any great advance over others already published. The design marked "W. N. G." has some points of considerable merit: should the journal in question not engrave this we would willingly do so.

St. Osmund's Roman Catholic Church, Salisbury, was opened on the 6th inst. The style is Early Decorated. The church consists of nave, chancel, and south aisle, having a chapel at east and tower at its west end. The latter is finished with a low broach spire, covered with tiles. The organ gallery is over the sacristy, at the south side of chancel, opening into the church in the chancel and east end of aisle. The altars, pulpit, and font are of stone, elaborately carved, the two former relieved by painting and gilding. The windows in chancel and Lady Chapel are all filled with stained glass, by Hardman, of Birmingham. Chancel and chapel are separated from the nave and aisle by oak screens, the former being surmounted by the Crucifixion, and Mary and John: the chancel roof is pannelled, and richly painted and gilt. The body of the church is filled with low open benches, of a simple but substantial character. The exterior of the church is built of flint, with stone quoins. Mr. Pugin is the architect; the flint and brick-work by Messrs. Crook, of Whiteparish; the stonework and plastering by Messrs. Lane, of Chilmark, and roofs and woodwork by Mr. Fisher. The accommodation is for 300, and the estimated cost between 2,000*l.* and 3,000*l.*

Completion of the Paris Louvre.—M. Visconti is, we believe, empowered to proceed with the completion of the Louvre. The Paris *Illustration* lately published a large number of the different plans which have been submitted for uniting the Tuileries and the Louvre, beginning from a very early period. It has been proposed to line the *Champs Elysées* with a row of statues on each side, commemorating the great men of France.

Liverpool Timber Trade.—The arrivals from America during September, are comprised in 32 vessels, 21,156 tons, against 38 vessels, 18,375 tons, in the corresponding month last year. So far the import is fully an average one, being in excess of both last year and the year before up to the same period. For St. John pine timber the price is well sustained, as also for Quebec. Spruce deals continue very much depressed. There is still considerable complaint of the want of country demand.

The Bedfordshire Archæological and Architectural Society held their second public meeting at Bedford, on Tuesday week, the Hon. George Rice Trevor, M.P., a vice-president, in the chair; when various letters were read, and a circular, with queries by the council, on various points relative to the state of churches, was exhibited. Mr. French read a paper on Ancient Egypt, and Mr. C. L. Higgins exhibited several bricks from the pyramids, made of earth and straw. Mr. Inskip then read a paper on the archæology of Bedfordshire, and various antiquarian specimens were afterwards handed round.

The Church of St. Isaac, at St. Petersburgh.—Mr. Anderson, known as the "Wizard of the North," gives in a sketch book which he has published the following rose-coloured notice of St. Isaac's Church, in the Russian capital, which has been fifty years in progress, and is still unfinished:—It has four fronts, each of which has its pediment supported by Corinthian pillars. The whole exterior of the church is of polished Finland granite, and each of the four fronts is formed of twenty-four pillars of the same material, red-coloured, and beautifully polished, the base and capital of the several pillars being bronze. On the entablature of every pediment is a bronze casting, illustrative of some portion of scripture history—the figures of which are twice the size of life. The entire structure is surmounted by a dome and minarets, which seem to rise up into the clouds, and the effect of the whole is grand and imposing. But if the outside of the building is rich and striking in appearance, what can one say of the interior? It is at once gorgeous and awe inspiring. The church on the inside is supported by one hundred and twenty-five pillars of malachite, a green stone of immense value: each column is twenty-five feet in height by three feet in circumference, with bases and capitals of solid gold, while the altars, which are covered with burnished gold, sparkle with thousands of diamonds.

Sculpture and Drawing in Wales.—The Cymreigyddion have offered, amongst the prizes to be awarded at the next Eisteddfod, a premium of 70 guineas for the best model in plaster, illustrative of the Cambro-British history, from either of the following subjects:—"1. The escape of Gruffydd ap Cynan, from Chester, borne by Cynfrig Hir; 2. Blegwryd, Archdeacon of Llandaff, sitting with Hywel Dda and his Counsellors at Ty Gwyn a'r Dâf, preparing the code of laws known as 'Cyfreithiau Hywel Dda;' 3. The Death of Tewdric, King of Gwent, in the moment of victory over the Saxons at Mathern on the Wye; 4. Ifor Bach, after storming Caerdiff Castle, leading Robert Consul and other Norman prisoners to his mountain fortress, Castell Coch." This is the first prize, we are informed, ever offered by an institution of this character *for encouragement of native artists in sculpture*. A prize of ten guineas is offered "for the best cartoon of the subject of Brân Fendigaid (the blessed) introducing Christianity into Britain, accompanied by Ilid Sant, who preached the Gospel to the men of Glamorgan; Druids standing by the side of a Cromlech frowning at the new doctrine; the old king wearing the aurdorch and talaith."

A Note for Auctioneers.—At Bolton county court, on Friday, the judge allowed a defendant to set off a claim which he had against a party who had sold his goods by auction, and a portion of which were bought by defendant. The action was brought by the auctioneer on the occasion. His Honour said though the auctioneer had a right to sue, he must do so subject to the claim of the defendant against the owner of the goods.

New Patent Iron Girders.—Mr. J. H. Porter, of Blackheath, engineer, has taken out a patent for girders, on a principle asserted to realise strength of form and substance with the least possible amount of metal, and greatly reduced cost. The patent consists in the application of corrugated iron—whether in curved or angular lines, and for parts of cylinders, or tubes, with compression lengthwise—to the formation of beams, girders, trusses, or supports, generally; and in the particular application of said iron,—with the corrugations both vertical and horizontal—to the rendering of floors of buildings fire-proof.

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Brown, College-hill	£2,996
Piper, Bishopsgate	2,850
Herd, Paddington (accepted)	2,525

TO CORRESPONDENTS.

"*Drying Rooms.*"—In reply to our correspondent who asks to know the best means of drying wood, a correspondent wishes us to remind him of the Patent Desiccating Company's process, which is said to render wood fit for use in a few days.

"*Bridgewater House.*"—Our arrangements do not permit us to comply with the request of "P." at this moment. The lines between the corridor and the principal staircase shew portion of the skylight over. The staircase is lighted wholly from the top. The fire-places in gallery are as shewn.

"*C. Z.*"—The profit (say 20 *per cent.*) is added to the cost.

"*B. W.*" (Bristol).—Apply to secretary of Society of Arts, John-street, Adelphi.

"*Delta.*"—Apply to the manufacturers themselves.

"*Site for the Arch.*"—For half a dozen suggestions on this subject we have not room.

"*R. S. D.*"—We cannot say anything of the invention in question.

"*Correspondent.*"—The duty is 5s. 10d. per thousand.

"*W. H.*"—Stone may be porous, yet very hard.

"*Received.*"—"J. P." "X. Y. Z.," "C. B.," "R. J. H." (thanks; we did without), "E. F.," "L. and B.," "Monsieur H. de G.," "W. H.," "W. J." (apply to Mr. Newlands, Liverpool), "W. S.," "W. H.," "Subscriber," London (the medals of the institute are *not* confined to members), "J. B.," "J. C.," "T. F. and T." (Mr. White's address is 9, Lincoln's-Inn Fields), "S. W.," "W. T.," "Archi," "J. M." (the substance of letter to the *Times* appeared in Builder long ago), "S. S. S.," "C. E." (we have not time to call), "J. G." (a similar plan was suggested in The Builder some time ago), "R. K." (trenches

a little on a subject in hand, but *n'importe*), "A. B.," "G. R. C.," "Constant Subscriber" (there is, or was, one of the bell-indices, so to call it, at the Society of Arts, Adelphi), "A Youngster" (apply to 19, Hanover-square, London), "X. Y. Z." (ditto), "J. M'D." (ditto), "Working School" (we are unable to recommend a school), "Rev. J. L. P.," "Dr. M.," "Subscriber," "M. A. A.," "J. M." (a remission of the duties may be obtained: the committee are entitled to the advantage), "Ingenieur," "J. H." (declined with thanks), "W. C. F." (steeping in lime water, or anointing with oil is considered useful), "W. C." (there are no arbitrary proportions), "S. E. P." (Peel's Coffee-house, Fleet-street, or the Hall of Commerce), "Aliquis" (next week).—"Contractors' and Builders' Pocket Guide," by E. V. Gardner, second edition (Trelawney and Saunders); "Is Cholera Contagious or not?" by W. Reid, M.D. (London, Highley); "The Westminster Review," "Blackwood," "Anglo-Jewish Magazine," "Dolman's," "Man in the Moon," "Milner's Atlas of Astronomy" (part 6); "Companion to the Builder's Friend, by Henry Fitzgerald, being the last List of Sawyers' Prices of Work, as agreed between Masters and Men in London" (Purdy, Yarmouth).

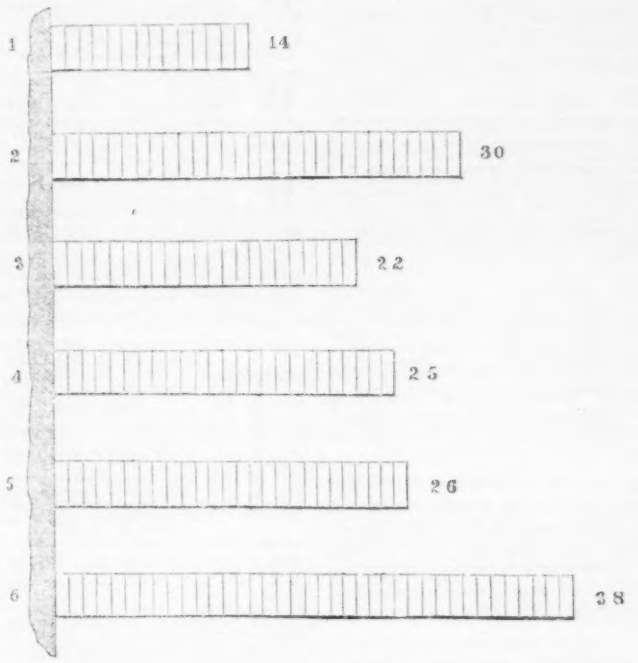
"*Books, Prices, and Addresses.*"—We have not time to point out books or find addresses.

[Advertisement.]

THE STRENGTH OF PORTLAND CEMENT.

MESSRS. ROBINS, ASPDIN and Company announce the result of the *public experiments* made with their Portland Cement, in the presence of many professional and scientific gentlemen, at Scotland-yard, on Monday, the 18th ult., and by adjournment at Messrs. Robinson and Sons (late Bramah and Robinson), engineers, Pimlico, on Tuesday, the 26th ult.

First Series of Trials.



No. 1. All Cement.—14 bricks bore a weight of 9 cwt. for some minutes, a small additional weight being added, broke in the brick.

No. 2. 1 Cement to 1 Sand.—30 bricks, with 8 lb. weight on the last brick, stood till 7 lb. weight added, when the bricks broke in three places.

No. 3. 1 Cement, 2 Sand.—22 bricks, broke in the bricks, after weights to the amount of 168 lbs. put on the 22nd brick.

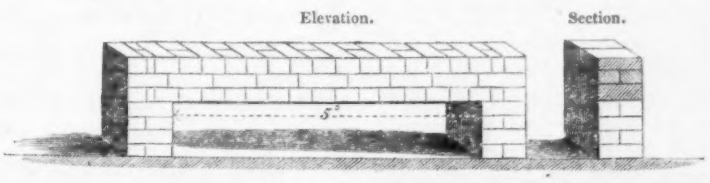
No. 4. 1 Cement, 4 Sand.—25 bricks, sustained 56 lb. on the 25th brick till brick broke.

No. 5. 1 Cement, 5 Sand.—26 bricks, 56 lb. put on the 26th brick, stood 15 minutes, the weight increased to 74 lb., when a brick broke, with slight accidental pressure.

No. 6. All Cement.—38 bricks, with weight on 38th, equal in all to 40 bricks, broke in the brick, with small additional weight.

Second.

Brick beam, three courses deep, tested on 27th day after formation.



All Cement.—Loaded by degrees with 58 cast-iron bars, or 2 tons 18 cwt., when the bricks broke across in two places. A fragment picked up consisted of a splinter from four bricks, with the cement like stone, combining them in a cruciform shape.

1 Cement, 3 Sand.—Split partially in the bricks under a weight of 47 cwt., but did not break down till struck repeatedly with a sledge hammer.

1 Cement, 5 Sand.—Weight on the beam 31 cwt.

1 Cement, 6 Sand.—Weight on the beam 24 cwt., it broke in six out of nine bricks, having been accidentally struck.

Third.

Two pieces of the best Portland stone, united with Portland Cement, the stones being 2 feet long by 9 inches broad in superficies, having been cemented together for twenty-eight days, the whole slung on a bearing 3 feet 6 inches across, between two pairs of dogs or nippers, with a weight scale below, in an elevation of 11 feet in height.

The stone scaled and broke under a weight of 38 cwt., the lower stone leaving the cement nearly entire, with a stony scaling over its surface above.

Fourth, tested by Bramah's Hydraulic Press.

A small piece of *Pure Cement*, 1½ inch surface by 1 inch, six months old, and laid on its inch surface, withstood pressure till partially crushed at 18 tons 3 cwt.

A small piece of *Portland stone* of the same size, crushed under a pressure of 23 cwt.

Blocks of cement and cement and sand.

18 inches long × 9 × 9 inches, placed vertically.

All Cement.—Twenty-eight days old; pressure, 58½ tons.

1 Cement, 1 Sand.—Do.; pressure, 47 tons.

The hydraulic press not being powerful enough to test the strength of the pure cement and its slighter mixture with sand, the meeting was adjourned till the 26th ult., when one of the previous blocks, all cement, then thirty-five days old, bore a pressure of 68 tons, when it cracked at one angle, but ultimately bore a pressure of 90 tons previous to its breaking down.

An exactly similar block bore 104 tons.

Another block of the same size and age, bore a pressure of *one hundred and forty-one tons*, and stood under such pressure upwards of a minute, when it broke up with a report!!

The block, 1 cement and 1 sand, previously submitted to a pressure of 47 tons, now cracked or severed in the centre at that pressure: the two pieces ultimately bore a pressure of 108 tons before breaking down, the form of the crack not altering.

Certificates, signed by many highly respectable professional and scientific gentlemen present at the trials, may be seen at the Counting-houses, Great Scotland-yard, Whitehall.

Messrs. Robins, Aspdin, and Company submit the foregoing experiments and tests to the public, without deeming it necessary to make any comment or observations beyond referring them to the experiments on the strength of cements, published in THE BUILDER on the 15th and 22d days of July last, by comparison with which the great superiority of Robins, Aspdin, and Company's Portland Cement will be manifest and apparent.

ADVERTISEMENTS.

J. MASON begs to call the attention of the Nobility and Gentry to his superior Collection of Terrace Pieces, Garden and Pleasure Ground Vases, Flower Pots, Fountains, &c. &c. Also Architects, Surveyors, and Builders to a great variety of Perforated Ornaments, for Parapets, Balconies, Terraces, and Garden Walls, Capitals, Trusses, Consols, Chimney Shafts, and other Ornaments, &c. Coats of Arms finished in a superior manner, all at half the usual price.—25, Providence-row, Finsbury-square, from Albion Wharf, Blackfriars-bridge.

TO BUILDERS, ARCHITECTS, AND THE TRADE.

WROUGHT-IRON LANCASHIRE HINGES of every description supplied at the lowest prices by JOHN SUMNER, Hinge Manufacturer, Ashton, near Warrington.

*** Lists of prices forwarded on application.

CAST-IRON PIPES, IRON WORK FOR OVENS, &c.

RAIN PIPES, &c.—F. A. TIDDEMAN, Purfleet Wharf, Earl-street, City, near Blackfriars-bridge, keeps a large stock of Rain Pipes, Heads, Shoes, Elbows, &c., half round and O. G. Gutters, Socket Pipes for Water or Gas, Flanch Pipes, Sash Weights, and other Castings; Iron Work for Baker's Ovens of every description, fitted complete, to be had in sets or in parts.—Prices equal to all competition. Contracts taken to any extent.

TO BUILDERS AND OTHERS.

RAIN-WATER PIPES, heads, shoes, and elbows, half-round and O G gutters, sash weights, railing bars, sink and stable traps and gratings, air bricks, close and open coal plates, scrapers, tile lights, balcony panels, barrow wheels, &c.

GAS and WATER-PIPES, bends, branches, Tee pieces, syphons, and lamp columns; also hot-water pipes for heating buildings and hot-houses, and FLANGE PIPES, with all the usual connexions. A large stock of the above CASTINGS at very low prices, at JONES'S, Iron Bridge Wharf, No. 6, Bankside, Southwark.

LAP WELDED IRON TUBES.—W. H. RICHARDSON, Jun., and Co., MANUFACTURERS of every description of WROUGHT IRON TUBES for Locomotive and Marine Boilers, Gas, Steam, and other purposes.
PATENT TUBE WORKS, DARLASTON, STAFFORDSHIRE.

NAILS and IRONMONGERY from BIRMINGHAM.—To BUILDERS, ARCHITECTS, &c.—Nails, Locks, and every description of Builders' Ironmongery, of the best quality, supplied at the lowest Birmingham prices, by FREDERICK BLYTH, Patent Cut Nail Manufacturer and General Factor, Edmund-street, Birmingham. Lists of prices forwarded upon application.

IRON FOUNDRY, 9, Brick-lane, Old- street, St. Luke's.—J. J. JONES having made great additions to his STOCK OF PATTERNS, begs to inform the Trade, that he can now supply them with Plain and Ornamental Iron Columns, Girders, Railings, Gates, Iron Coping, Balconies, Window Guards, Verandahs, Ornamental Staircase Panels, Iron Staircases, Tomb Enclosures, Trellis Panelling, Lamp and other Brackets, Cantilevers, Newel Bars, Water Closet Work, Area Gratings, Fly and other Wheels, Wheel Plates, &c.

BAKER'S OVEN WORK, Forge Backs and Troughs, Rain Water Pipes and Gutters, Sash Weights, Furnace Bars, Stoves, Ranges, &c., always in stock.

IRON FOUNDRY,
169, DRURY-LANE, and CHARLES-STREET, DRURY-LANE
JOSEPH GLOVER,

Solicits the attention of the Trade to his extensive Stock of PATTERNS for CASTINGS of EVERY DESCRIPTION, consisting of those for every purpose, either structural or ornamental.

Wheel Pinion and Steam-Engine Patterns; Range Stove and Hot Plate Metal.

A stock of Rain-Water Pipes, Plain and O G Guttering, Air Bricks, Sash Weights, &c. &c.

A very superior description of Soot Door, particularly suitable for internal work, being perfectly secure, and not unsightly.

ESTIMATES given for IRON ROOFING and every description of Ironwork, complete to specification, and the work executed with every attention to quality and dispatch.

GLOVER'S FOUNDRY,
168, DRURY-LANE, and CHARLES-STREET.

FLEXIBLE INDIA-RUBBER PIPES AND TUBING,
For Railway Companies, Brewers, Distillers, Fire Engines, Gas Companies, Gardening and Agricultural purposes, &c.

THE PATENT VULCANIZED INDIA- RUBBER HOSE-PIPES are made to stand hot liquor, and acids without injury—do not become hard or stiff in any temperature (but are always perfectly flexible) and as they require no application of oil or dressing, are particularly well adapted for locomotive engines, railway cranes, fire engines, pumps, gas, beer engines, gardens, and all purposes where a perfectly flexible pipe is required. Made all sizes, from ¼ inch bore upwards, and of any length to order. Vulcanized India rubber garden hose fitted with brass-taps, copper branch and roses complete, ready to be attached to pumps, water-butts, or cisterns. Sole manufacturer, JAMES LYNE HANCOCK, Goswell-mews, Goswell-road, London.

N.B. Vulcanized India-rubber washers of all sizes for joints or hot-water and steam pipes, and vulcanized sheet rubber any thickness for all kinds of joints, and other purposes.

GALVANIZED IRON FOR ROOFING, &c.—The Galvanized Iron Company beg to direct the attention of architects, surveyors, builders, and others, to their Patent Galvanized Iron, which is peculiarly adapted for ROOFING and BUILDING PURPOSES, especially for Tropical climates, being cheaper and more durable than zinc, lead, tin, or any other metal, calculating weight and strength. This fire-proof material has been used for roofing the new Houses of Parliament, ship-building and timber sheds in her Majesty's dock-yards of Deptford, Woolwich, Chatham, and Portsmouth; and at many of the principal Railway stations, gas works, &c. &c. This material is also admirably adapted for the construction of conservatories, fire-proof buildings, chain and wire rope bridges, corrugated doors, shutters, &c. &c. Specimens may be seen, and every information obtained at the Offices of the Company, No. 3, Mansion House Place, City—London. Works at Millwall, Poplar, Middlesex; Broad-street, Birmingham; Cobyn's Hall, near Dudley.

TO ARCHITECTS AND BUILDERS.

CHUBB'S WROUGHT-IRON and FIRE- PROOF DOORS and FRAMES, for strong Rooms. A large stock of the above, of all sizes, made in the best manner, and of different strengths, fitted with CHUBB'S PATENT DETECTOR LOCKS, throwing from two to twenty bolts, constantly on sale, at very moderate prices. FIRE-PROOF SAFES of every size, and Patent Detector Locks and Latches for all purposes.—C. CHUBB and SON, sole Manufacturers, 57, St. Paul's Churchyard, London.

PRO BONO PUBLICO.

CAUTION to Purchasers of FIRE-PROOF DOORS for Strong Rooms, Safes, Chests, and Detector Locks, &c. &c. LEADBEATER, many years manufacturer for Chubb.

LEADBEATER begs most respectfully to inform Architects, Surveyors, Builders, &c., that he can supply them with IMPROVED DETECTOR LOCKS for universal purposes. STRONG WROUGHT IRON FIRE-PROOF DOORS, SAFES, and CHESTS, &c., on the most improved principles of security against FIRE and THIEVES, without the aid of "expensive machinery," which is employed by some inexperienced makers, but must be paid for; at prices 25 per cent. under any other house in London.

LEADBEATER offers ONE HUNDRED POUNDS reward to any person who can pick his improved detector locks or latches. Some thousands of Leadbeater's strong-room doors and safes have now been put up without a SINGLE COMPLAINT, and fifteen years' practical experience, during which he has adapted every possible improvement to real security, enables him to challenge competition with any house in London. A large assortment of all sizes on sale and made to order. A pair of extra strong wrought-iron fire-proof folding-doors with ventilating gates, made expressly for a banker's strong room, may be viewed at his manufactory. Strong wrought-iron doors for party walls, with wrought-iron rabitted frames, and secured by the BEST DETECTOR LOCKS in ENGLAND, 6 feet high by 2 feet 2 inches wide and upwards, price 16*l.* each, always on hand at LEADBEATER'S MANUFACTORY, 25, ALDERSGATE-STREET, LONDON.

REDUCED PRICES.

WILLIAM CLEAVE, of Wilton-road, Pimlico Basin, begs to acquaint Builders and the Trade that he has now on hand, at his Manufactory (the first of its kind ever established), a very large Assortment of Dry and Well-seasoned FLOORING BOARDS and MATCH BOARDING of all sorts, from ¾ inch to 1¼ inch thick, planed to a parallel width and thickness, and at greatly Reduced Prices. Also, Timber, Deals, Oak Planks, Scantlings, Sash Sills, Moulding prepared by Machinery, Laths, &c.

Apply at W. CLEAVE'S Flooring Manufactory and Timber Yard, Wilton-road, Pimlico Basin, late C. MOORE and SON.

A REDUCTION in the PRICE of FLOOR BOARDS.—ALFRED ROSLING begs to inform the Trade and Consumers generally, that he has REDUCED the PRICE, and keeps constantly in stock a large and very general assortment of Prepared Floor Boards and Matched Boarding, laned to a parallel breadth and thickness, and fit for immediate use; also a variety of machine-prepared Mouldings, which are finished with great accuracy and attention to quality of workmanship.—Southwark Bridge Wharf, Bankside, and Old Barge Wharf, Upper Ground-street, Blackfriars.

THE LOWEST PRICES for CASH.—T. ADAMS (late S. DARE), MAHOGANY and TIMBER MERCHANT, Bermondsey New Road, near the Bricklayers' Arms. SEASONED FLOORING, MATCH-BOARDING FIT FOR IMMEDIATE USE, and MOULDINGS prepared by machinery, Cut Deals and Scantling of every dimension, Mahogany, Cedar, Rosewood, Wainscot, Elm, Beech, Oak, &c., in planks, boards, veneers, and logs; Pantile, Oak, and Fir Laths; Wheelwrights' Goods. All sawn and prepared goods delivered free of expense (except timber). Sawing charged at mill prices. Very extensive Drying Sheds.

MAHOGANY.—Twenty Thousand Pounds' worth of dry HONDURAS and SPANISH MAHOGANY and WAINSCOT always on hand, suitable for Builders, Pianoforte Manufacturers, Cabinet and Coachmakers, Railway Contractors, and all persons requiring well-seasoned materials at moderate prices, at T. C. WILSON'S Timber-Yard, 13, Greek-street, Soho.—T. C. WILSON adopts this mode of informing the public where they can procure dry and superior articles, in consequence of the numerous complaints of parties having bought wood elsewhere as seasoned, where upon working the same it has proved otherwise.

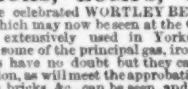
MUIRS PATENT PLANING MACHINE.

SAW MILLS, GILLINGHAM-STREET, PIMLICO.

TIMBER of any size, PLANK, DEALS, and BATTENS, &c., Sawn on the most approved principle. Boards, &c., Prepared, Matched, and Grooved, by Muir's Patent Machinery. The Mills have all the advantages of navigation and water-carriage, being connected with the Thames by the Grosvenor Canal. Goods fetched from the docks and carted home free of charge.

Address to HENRY SOUTHAM,
Saw Mills,
Gillingham-street, Pimlico.

N.B. Estimates given for Sawing and Planing.



WOOD THOROUGHLY SEASONED in DAYS instead of YEARS, by DAVISON and SYMINGTON'S PATENTED PROCESS, at the Patent Desiccating Company's Establishment (for Seasoning, Sawing, and Planing Wood), at the Grand Surrey Mills, immediately adjoining the Commercial and East Country Docks, Rotherhithe. The new process ensures the entire removal of moisture, hardens the gums, prevents further shrinkage, and strengthens the fibre.—For scale of prices, or license to work the patent, or any further information, address, post-paid, or apply to ANGUS JENNINGS, Secretary.

The Patent Desiccating Company's Offices are REMOVED from 28, New Broad-street to No. 41, GRACECHURCH-STREET, CITY.

COOZE'S IMPROVED MARBLE PAPERS.—The Trade are supplied with these beautiful Papers, which are the sole invention of W. W. COOZE, Decorator to her Majesty. They will be found fully equal, in effect, to painting, at a considerable saving of expense. W. W. C. invites an inspection at his Manufactory, 20, Frith-street, Soho-square, where also may be seen designs of every style of decoration, which are executed on the most economic terms. Contracts taken and workmen sent to any part of the United Kingdom.—20, Frith-street, Soho-square.

PAPER-HANGINGS, CHEAPEST IN LONDON, — Builders, the Trade, and Country Dealers, may select from a Stock of 20,000 Pieces, of the newest designs, French and English. Bedrooms, 4d. per yard; Satins, 3d. per yard; Flocks, 6d. per yard. Patterns for approval sent in town or country; and Goods forwarded free of expense. A large discount allowed on taking a quantity. Panel decorations, flowers, or oaks remarkably cheap. Terms, cash. Established twenty years W. CROSBY, 22, Lowther Arcade, Charing Cross.

PAPER-HANGINGS, MANUFACTURED UNDER HER MAJESTY'S ROYAL LETTERS PATENT.

E. T. ARCHER, 451, Oxford-street, solicits an inspection of the various DECORATIVE PAPERS, fitted up in panels on the walls of the extensive range of apartments, built expressly for that purpose; where also is kept an extensive stock of every variety of Paper-hangings, at the lowest possible price and of the best manufacture, in English and French Designs, by the best Artists; and where may be had a large assortment of French and other Continental Paper-hangings always on hand.—Builders and large Consumers are particularly invited to the above.—451, Oxford-street.

TO BRICKMAKERS, POTTERS, AND LIMEBURNERS.

SWAIN'S PATENT KILN.—The attention of the above is drawn to a most valuable Invention in the manufacture of Bricks, Drain Tiles, and all kinds of Pottery, consisting of a Kiln, constructed on Scientific Principles, to burn with one-third the quantity of Coals at present required, and also in a third the usual time, thereby enabling the Manufacturer, from the great saving of both Fuel and Labour, to supply to the Consumer at a considerably Reduced Price, and realise a Larger Profit himself.—Particulars may be obtained by application to Mr. CHARLES J. BAKER, 18, Lower Brook-street, Grosvenor-square, London; or to the Patentee, W. SWAIN, Brickmaker, Westonbury, near Lecminster, Herefordshire, where a Kiln can be seen in operation.

FIRE BRICKS, LUMPS, QUARRIES, &c., from the celebrated WORTLEY BED of CLAY, near Leeds (a cargo of which may now be seen at the Caen Stone Wharf, Rotherhithe), are extensively used in Yorkshire, Lancashire, Derbyshire, &c., by some of the principal gas, iron, and glass works, and the proprietors have no doubt but they can supply them on such terms in London, as will meet the approbation of parties using such articles. The bricks, &c., can be seen, and every information as to price, &c., obtained, by applying to SAMUEL COOPER, Caen Stone Wharf, Rotherhithe, or to the Farnley Iron Works, near Leeds, Yorkshire.

FIRE BRICKS.—WARD and HART, Honduras Wharf, Bankside, respectfully solicit the attention of Gas Companies, Builders, Engineers, Oven Builders, Shippers, and others to the fact that they have now completed their Stock of Stourbridge, Welsh, and Newcastle Fire Bricks, Lumps, and Tiles, of all sizes and shapes, which they are offering with every advantage to purchasers. Goods may be had from ships in the river at a great reduction. Fire Clays, Loams, Dutch Clinkers, Stock Bricks, Windsor Bricks, Oven Tiles, Pan, Plain, Ridge, and Paving ditto, Moulding Sand, House Sand (red and white), River Sand, Ballast, Lime, Cement, Malt and Corn-drying Kiln Tiles, now in such general use for malting, &c. &c., Chimney-pots, Drain Pipes, Tiles, &c. &c. Goods made to pattern at the shortest notice. Sanitary Pipes of every description. Country orders executed with dispatch. Country Builders will find this the cheapest market for the above.

GREAVES'S BLUE LIAS LIME and LIAS CEMENT.—Messrs. RUTTY and VEREY'S, 3, South Wharf, Paddington Basin. Works at Stratford-on-Avon and Southam. GLAZED STONE WARE DRAIN PIPES on hand.

ATKINSON'S CEMENT.—WILLIAM WOOD, Jun., Manufacturer of Roman, Portland, and Bath Cement, Blue Lias Lime Works, CHURCH STREET, ROTHERHITHE, Sole Consignee for Atkinson's Cement.—Cement Chimney-pots of every pattern.

ROMAN CEMENT.—Great complaints having been made of the inferior quality of some descriptions of Roman Cement, which for some time have been offered to the Building public, Contractors, &c., THOMAS FREEN and Co. beg to assure Architects, Surveyors, Contractors, Builders, &c., that the CEMENT manufactured by them continues in every respect the same as that produced at their Works during the last five-and-twenty years, and can, consequently, be warranted of the best quality.—Roman Cement Works, Canal-road, Kingsland-road.

KEENE'S PATENT MARBLE CEMENT forms an exceedingly hard and indestructible Stucco, which may either be prepared for paint, or finished in imitation of stone, by the addition of Portland or other stone dust.

It is a cheap and efficient substitute in place of wood for skirting, architrave, and other mouldings, in its application for which purposes it checks the progress of Fire and the attacks of Vermin.

Patentees and sole Manufacturers, J. B. WHITE and SONS, Millbank-street, Westminster, and Seel-street, Liverpool.

PORTLAND CEMENT.—J. B. WHITE and SONS, request reference to Nos. 284 and 285, pages 343 and 351, of "The Builder," for accounts of experiments on the strength of Portland Cements.—These trials show that for the practical purposes of building, the connecting power of Portland Cement exceeds that of Roman Cement in the proportion of four to one; thus marking it as the most fit material for turning the brick arches of Railway bridges and other works of a critical nature, while its firm adhesion to most sorts of stone, as well as bricks, combined with its eminently hydraulic properties, adapt it for such purposes as the building of sea and wharf walls, and the lining of reservoirs, cisterns, baths, &c. Manufacturers, J. B. WHITE and SONS, Millbank-street, Westminster.

PORTLAND CEMENT, solely Manufactured by W. ASPDIN, Son of the Patentee. This Cement has been proved, for upwards of twenty years in the Thames Tunnel, to resist the action of water; it is stronger in its cementitious qualities, harder, and more durable than any other description of Cement; it does not vegetate, oxydate, or turn green; nor is it affected by any atmospheric influence whatever the climate, resisting alike the action of frost and heat. It is manufactured to set in from five to sixty minutes. For all purposes that Cement is applicable the Proprietors challenge competition.—Orders received by Messrs. ROBINS, ASPDIN, and Company, at their Manufactory, Northfleet, Kent, and their Wharf, Great Scotland-yard, Whitehall; also by their Agent at the Depôt, 1, Back Goree, Liverpool.

JOHNS and CO.'S PATENT STUCCO CEMENT and PAINT.—The attention of Architects, Builders, Plasterers, Painters, Merchants, and the Public generally is solicited to the many advantages attached to these celebrated Materials, which, for their appearance, durability, imperviousness, utter resistance to frost or heat, and general economy, distinguish them from all other cements and paints, and fully justify the confidence reposed in them, as shewn by the numerous testimonials received from public bodies and private individuals of the first importance.—Prospectuses and particulars may be obtained from the sole agent, PHILIP HARE, at the Warehouse, 22, Steel-yard, Upper Thames-street.

PARIAN CEMENT, used as a Stucco, cannot easily be distinguished from Statuary or Parian Marble. It is fit for all the purposes of that beautiful material, and does not crack, warp, or efflouresce in any degree. The fine quality will incorporate with the most delicate colours; is adapted to encaustic work, fresco, imitation of marble, and the most elaborate embellishment. So perfect are its setting or crystalizing properties, that the coarse quality, when applied to newly-built or damp walls, may be immediately polished, painted, or papered; and rooms rendered habitable before the materials ordinarily used would begin to dry.—Manufactured by CHAS. FRANCIS and SONS, Roman Cement Works, Nine Elms, London.

MARTIN'S PATENT FIRE-PROOF and ORNAMENTAL CEMENT—REDUCTION of PRICE.—The Patentees beg to inform their Friends and the Public that they have made arrangements which enable them to offer this invaluable cement at a considerably reduced price. It has now been before the public so many years, and has obtained so high a standing in the estimation of all who have used it, that it is unnecessary to comment on its merits. The Patentees, however, feel called upon to observe, that by its use—from the greater amount of surface which a given quantity will cover, and the small amount of labour required in working it, a saving of 25 to 50 per cent. is effected as compared with other cements for internal use. Specimens shewing its beauty, hardness, and applicability to all plain and ornamental purposes, may be seen; and the Cement in any quantity obtained of the Patentees, Messrs. STEVENS and SON, at their Plaster and Cement Works, 186, Drury-lane, London.

BOARD'S PORTLAND, BATH, and IMPROVED ROMAN CEMENT, Dunball, near Bridgwater.—The Proprietor of these Works begs to inform the public that he is now enabled to supply them with an unlimited quantity of the above Cements, and that the Bath and Portland will be found to resemble these celebrated stones both in colour and durability. They are recommended as being superior to all others, for the following reasons:—Being made of Inland Stone (and not dredged from the sea as stone for Roman is), they are not impregnated with salt, therefore never vegetate or turn green (a fault so generally complained of with Roman), they take a much larger quantity of sand than other Cement, never crack, blister, or peel off, and will be found even preferable to stone. They are perfectly Hydraulic, and will set under water in a few minutes; as an external Stucco they are impervious to all kinds of water, and not affected by frost or heat; they improve both in texture and durability, and require neither paint nor colour to make them resemble the best Bath and Portland stone, no other mixture being required than common sand. When used as an internal Stucco for walls, staircases, passages, &c., the Bath and Portland Cements may (if required) be trowelled up to a face almost equal to marble, or may be painted or papered on in a few days. The IMPROVED ROMAN CEMENT is made of the same kind of material, and will be found to possess all the qualities of Bath and Portland (except that of colour); it is cheaper, and in every respect better, than any previously offered to the public, and only requires one trial to be appreciated.

A stock of those Cements, as well as Blue Lias Lime ground for concrete, always on hand, which may be had at BOARD'S Depot Stone-yard, Paddington Station, and of the following Agents—viz., Mr. R. Creft, Surrey-street, Kent-square, Liverpool; Mr. Baker, 73, Digbeth, Birmingham; Mr. Furze, Hotwells'-road, Bristol; Messrs. Tothill and Co., Temple Backs, Bristol; Mr. W. Davey, Quay, Bath; Mr. Grimsly, Oxford; Messrs. Clarkes, Reading; Mr. Thos. George, Windsor; Mr. Hurniman, Taunton; Mr. Tuckett, Exeter; Messrs. Browne's and Co., Bridgwater; Messrs. Southam and Evans, Gloucester.

TODD'S PATENT METALLIC PROTOXIDE PAINT, for Stucco Fronts, Brickwork, Iron, Wood, and every description of Painting. This Paint has been most severely tested for nearly four years, by men of great experience, and has been extensively used under the superintendence of Architects, Engineers, and Surveyors of the greatest eminence.—Orders to be addressed to Mr. B. TODD, Patentee, 23, Dean-street Soho, London.

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FIRST-RATE ORNAMENTS in ROMAN and other CEMENTS, and PLASTER of PARIS, at reasonable prices, consisting of Vases, Balusters, Capitals, perforated Panellings, Cantilevers, Brackets, Trusses, Wreaths, Scrolls, Masques, Heads, Figures, Friezes, Gothic and other Chimney-Shafts, Soffits, Bed-moulds, Paterns, &c., &c., 36-inch Centre, Flowers fixed complete, 24s. each, smaller in proportion. An assortment of Shop-front Trusses always ready for fixing.—JOHN HERBERT and SON, Modellers, &c., 42, Parker-st., Drury-lane.

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E. & W. H. JACKSON beg to call the attention of builders to the reduced prices of their PATENT PLATE GLASS, which, from its cheapness, is now superseding Crown in all respectable dwelling-houses. BRITISH and ROUGH PLATE, CROWN, SHEET, and ORNAMENTAL GLASS supplied at the lowest terms.—Lists of prices, and every information, can be had on application at their warehouse, 315, Oxford-street.

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WINDOW GLASS.—JAMES PHILLIPS and Co. begs to inform the trade and consumers he has a large STOCK of SHEET GLASS of superior quality on hand, which he will supply in cases containing 200 feet of sizes, about 40 by 30, at 42s. 6d. per case—delivered free in any part of London.—Address, 116, Bishopsgate-street Without.

WINDOW GLASS.—THOMAS MIL- LINGTON begs to inform the Trade and Consumers that he has a large Stock of Sheet-Glass on hand, which he will supply in 200-feet cases, delivered free in London for 42s. 6d. per case, or cut to size, 3d. per foot.—Address, 87, Bishopsgate-street-without.

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CROWN, SHEET, and PLATE GLASS, in any quantity; VARNISH: fine Oak or Wainscot, 10s; Carriage, 12s per gallon; White Lead, 27s., and Colours and Brushes; Water Closets complete, 30s.; Lifting Pumps and Cocks of every description.

Milk Pans; Propagating, Bee, and Cucumber Glasses; Paper hangings from 1s. per piece upwards, of very superior description.

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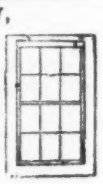
of Sashes and Frames, and Joiner to the Trade, 121, Bunhill-row, Finsbury-square.—Well-seasoned materials, superior workmanship, lowest prices.—Upwards of 400 DOORS, and a large variety of Sashes and Frames, always on sale. Glazed goods securely packed for the country. Steam-struck Mouldings in any quantity.—N.B. This Establishment is worth the notice of all engaged in building.



HERRING'S PATENT SAFETY WINDOW.—No invention ever offered the advantages to builders and the public; it will positively add 5 to 10 per cent. to all houses having it; repay the cost every two years; abolish all danger to life and limb, cleaning and repairing. It is in full operation (four different ways), forms a complete ventilator and sun-blind; all simple, cheap, and effective.—Apply for licences, and to inspect its real merits, to HERRING'S Patent Steam Bed-Feather Factory, 14, Kingsgate-street, London.

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WALKER'S PATENT. — WARMING and VENTILATING WORKS, LOWER KING-STREET, MANCHESTER.

Established for the manufacture by machinery, of various descriptions of approved apparatus for warming and ventilating all kinds of buildings by STEAM, HOT-WATER, and WARM AIR, and for the economical application of heat generally to manufacturing and domestic purposes.—The proprietor having been engaged for many years in an extensive practice of this art in various parts of the kingdom, and reduced it to certain and accurate data, and feeling satisfied, from the frequency of failure in warming and ventilating, that there exists a field for the operations of properly qualified persons, is prepared to undertake works of this kind, on the principle of guaranteeing any required temperature and stated amount of ventilation. Drying-rooms and stoves heated, where required, up to 300 deg. Fahrenheit, and drying operations generally planned and executed on improved principles. Having also bestowed much attention to reducing the expense and cumbrous nature of ventilating arrangements, he solicits public notice to the following highly useful, compact, and well-tried inventions:—

Walker's Patent HEAT-BOXES, Portable SELF-FEEDING BOILERS, improved SCREW-WARMING and VENTILATING MACHINES, HOT-WATER STOVES, TUBULAR and other WARM-AIR STOVES. Portable Steam-Engines of useful sizes, with cylindrical or tubular boilers.

Competent workmen sent to any part of the country. References to numbers of public institutions, churches, nobility and gentry, architects, manufacturers, &c., throughout England, Ireland, Scotland, and Wales.

COMPOSITIONS for WRITING with STEEL PENS.—STEPHENS'S WRITING FLUIDS compose the most splendid and durable colours, and the most indelible composition which art can produce; they consist of a BLUE FLUID, changing into an intense black colour. PATENT UNCHANGEABLE BLUE FLUIDS, remaining a deep blue colour. Two sorts are prepared, a light and dark blue. A superior BLACK INK, of the common character, but more fluid. A superior CARMINE RED, for contrast writing. A liquid ROUGE CARMINE, for artists and contrast writing, in glass bottles. A carbonaceous RECORD INK, which writes instantly black, and being proof against any chemical agent, is most valuable in the prevention of frauds. A liquid MECHANICAL and ARCHITECTURAL DRAWING INK, superior to Indian ink. Marking inks for linen, select steel pens, inkholders.—Prepared by the inventor, HENRY STEPHENS, 54, Stamford-street, Blackfriars, and sold by booksellers and stationers everywhere, in bottles, at 1d., 3d., 6d., 1s., and 3s.